MICRON
Millennia™ Pro2

PCI-Bus System
User's Manual

P/N MAS001324-02
12/96

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Micron Millennia Pro2 User's Guide

Revision MAS10036-MAN-02 12/96.

P/N MAS001324-02 (Lightning - Fab 'B')

DRH

Safety Information

The following instructions pertain to the risk of fire, electric shock, or bodily injury. Please read all of these instructions carefully.

1. Save these instructions for later use.

2. Follow all of the instructions and warnings marked on this product or included in this manual.

3. Do not use this product on an unstable cart, stand or table. The product may fall, causing serious damage to the product.

4. Slots and openings in the cabinet and the back are provided for ventilation. To ensure the reliable operation of your product, and to protect it from overheating, these openings must not be blocked or covered. Do not use this product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.

5. Never push objects of any kind into the product through the cabinet openings, as they may touch dangerous voltage points or short out parts that could results in fire or electric chock. Never spill liquid of any kind on the product.

6. This product should only be connected to the AC power source indicated on your product system's information label. If you are not sure of the type of AC power available, consult your dealer or local power company. Only connect this product to a power outlet that matches the power requirements of this product.

7. Do not allow anything to rest on the power cord. Do not locate this product where people may walk on the cord.

8. If you have to use an extension cord with this product, make sure that the total amperage rating of all equipment plugged into it does not exceed the amperage rating of the extension cord. Also, make sure that the total of all products plugged into the main AC power outlet does not exceed 15 amps.

9. Unplug your product from the main electrical power outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

10. Do not use this product near water.

11. Unplug this product from the main power outlet and call for service under any of the following conditions:

    A. If the power cord or plug is damaged or frayed.

    B. If liquid has been spilled into the product.

    C. If the product has been exposed to rain or water.

    D. If the product has been dropped or the cabinet has been damaged.

    E. If the product exhibits a distinct change in performance, indicating a need for service.

Power Supply Warning

Do not open the power supply cover as hazardous voltages may be present. There are no serviceable components inside.

Battery Warning

Caution

There is danger of explosion if the battery is replaced incorrectly. Replace only with the same or equipment type recommended by the manufacture. Discard used batteries according to the manufacturer's instructions.

Attention

Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie de meme type ou d'un type recommande par le constucteur. Mettre au rebutled batteries' usagees conformement aux instructions du fablicant.

Vorsicht

Explosionsgefahr bei unsachgemaB em Austausch der Batterie. Ersatz nur durch denselben oder einen vom Hersteller empfohlenen ahnlichen Typ. Entsorgung gebraushter Batterien nach Angaben des Herstellers.

FCC Information

Class B Digital Device: This device complies with Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult an experienced radio/TV technician for help.

Note: Shielded interface cables must be used in order to comply with the emission limits.

Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authorization to operate the equipment.

DECLARATION OF CONFORMITY

APPLICATION OF COUNCIL DIRECTIVE(S) 89/336/EEC and 72/23/EEC
Standard(s) to which Conformity is Declared:

EN55022
EN50082-1
EN60950

Manufacturer's Name:	Micron Electronics, Inc.
Manufacturer's Address:	900 E. Karcher Road Nampa, Idaho 83687 USA

Micron Electronics, Inc., hereby declares Micron systems bearing the CE marking are in compliance with the EMC (Electromagnetic Compatibility) directive of the European Community and conform to the Directive(s) and Standard(s) listed above.

A "Declaration of Conformity" for each system can be found on file at any authorized European Micron Dealer/Distributor. For a list of authorized dealers/distributors, please contact Micron Electronics, Inc. at 208-893-8970. When requesting a "Declaration of Conformity," please refer to the FCC ID number on the system label.

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Chapter 1

Setting Up Your System

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Unpacking

Check the Packaging

As soon as the packages containing your new system arrive, carefully inspect them for any signs of damage. In particular, look for wrinkled or bent corners, holes, or other signs of bad handling or abuse. If you notice any damage to the packaging, immediately open the boxes and inspect the contents for damage. Pay close attention to the components near the area where the packing material was damaged.

Unpack Your System

Caution: If your system arrives in cold weather, do not unpack the computer or the monitor until they have been allowed to come to room temperature. Immediately exposing them to the warm room may cause condensation to occur, which may damage the units. If condensation does occur, allow the units to completely dry before operating them.

After you have determined that the packaging is undamaged follow these steps:

1. Unpack and carefully inspect your system.

2. Taking care not to damage the packing material, carefully open the cardboard box containing the computer and remove the system unit, keyboard and any other accessories that you may have ordered.

3. Carefully unpack the monitor and all accessories from the monitor package. Be careful not to damage the packing material.

4. Inspect all items for damage that may have occurred during shipment. ***For your protection, report any damage to the shipper immediately.***

We highly recommend that you save the packaging in the event that you need to move or ship the system some time in the future.

Check Your Packing List

Now that you have everything out of the packages, take the time to check the packing list to be sure you received everything. If you discover that an item is missing, call Micron Electronics, Inc. immediately to receive a replacement. Refer to Appendix A for contact information.

Setup

Getting Started

Before your new system left the factory, Micron configured the hardware. The display adapter was set to work with your monitor and the hard disk was partitioned and formatted with DOS using the standard default settings for your machine. Your computer system is ready to go. All you have to do is plug it in.

What You Need

- A grounded power outlet
- Phillips-head screwdriver
- Power filter/suppressor protector (recommended)

Putting It All Together

To complete your setup refer to the following steps:

1. Take a moment and review the case figures on the following pages to acquaint yourself with the front and back of your system.

2. Check the voltage selector on the rear of the unit. Be sure it is switched for the proper voltage (115V in the United States and Canada).

3. Place the monitor where you wish, as long as its cable can still reach the video connector at the rear of the computer.

4. Unpack the power cable for the computer and plug the appropriate end into the power inlet at the back of the system. Insert the other end into a grounded power outlet. We highly recommend that you obtain a protection device such as an uninterruptable power supply (UPS), power filter or surge suppressor. In this way you will be providing the utmost protection for your system and data.

5. ***Ensure that the system is turned OFF before proceeding. Attaching peripherals while the power is on may damage the unit or the peripheral.***

6. Locate the monitor's power cable and plug the appropriate end into the monitor (if not already attached). Insert the other end into the grounded outlet or protection device.

7. Find the video cable and attach the appropriate end into the monitor (if not already attached) and attach the other end into the video connector (located in one of the expansion slots at the rear of the unit). If the connection is loose on either end, tighten the integrated screws at both ends of the cable for a secure connection. For more information about the setup, use, and maintenance of your video monitor, please refer to the manual that was supplied with it.

8. Insert the ends of the keyboard and mouse cables into the keyboard and mouse connectors at the rear of the computer system. Take care, for the connectors are keyed in such a way that the plugs can only be inserted if oriented correctly. Refer to the case drawings on the following pages for the location of the proper connector. ***If it does not plug in easily, do not force it.***

Your system should now be ready to use. You may have other devices or peripherals to install, but it is best to ensure the basic system is operating correctly before adding any options.

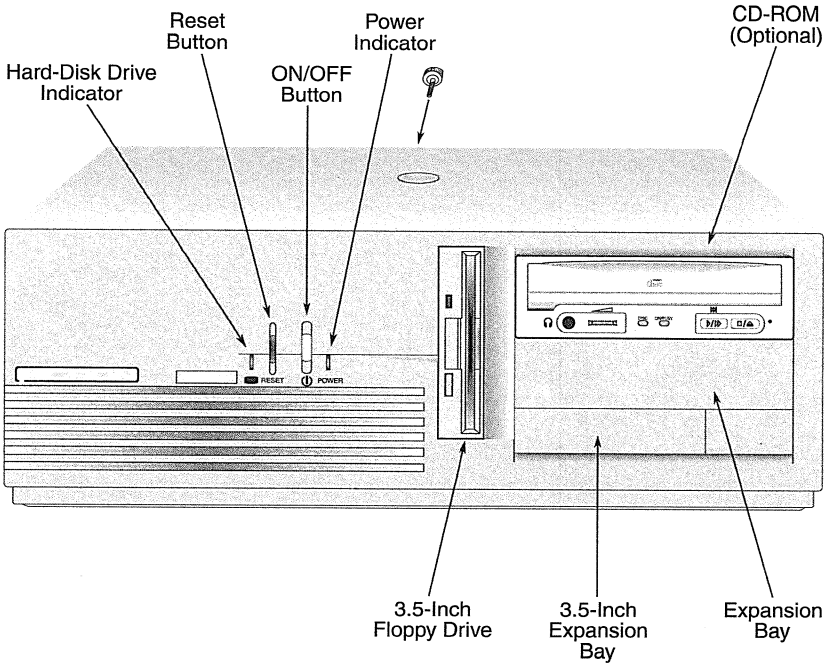


Figure 1-1. Desktop Case-Front

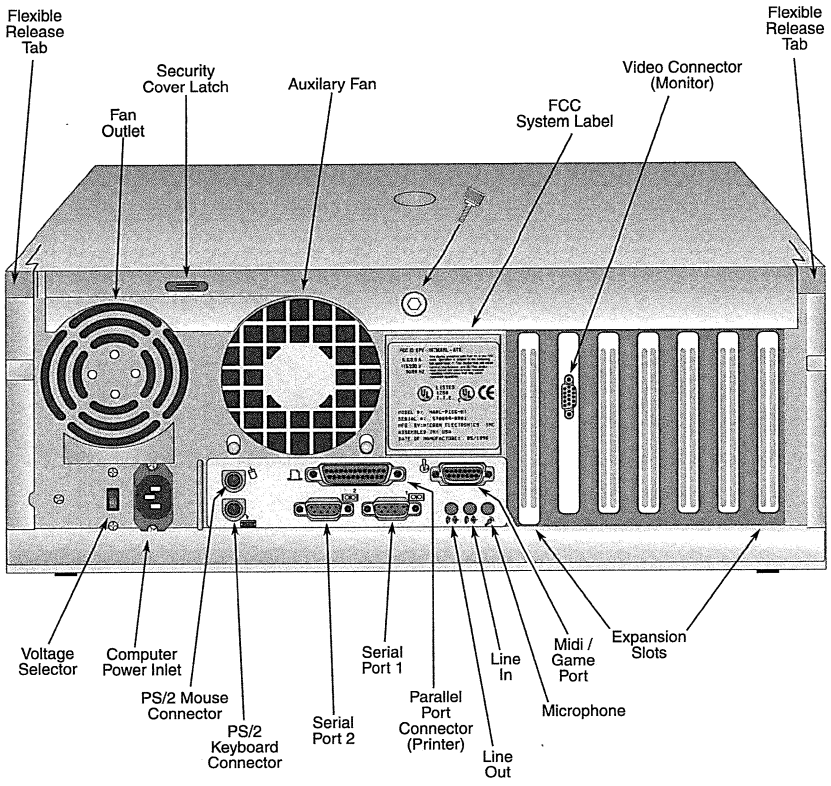


Figure 1-2. Desktop Case-Rear

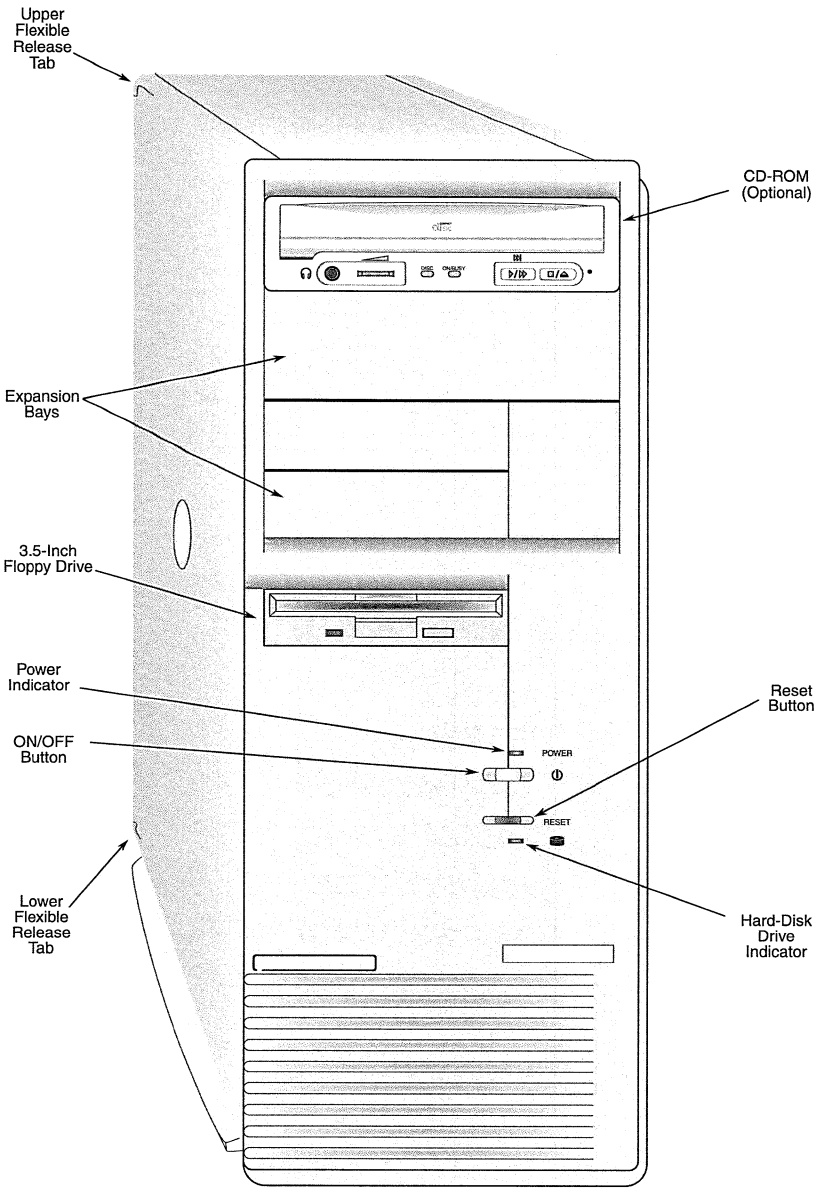


Figure 1-3. Mini Tower Case-Front

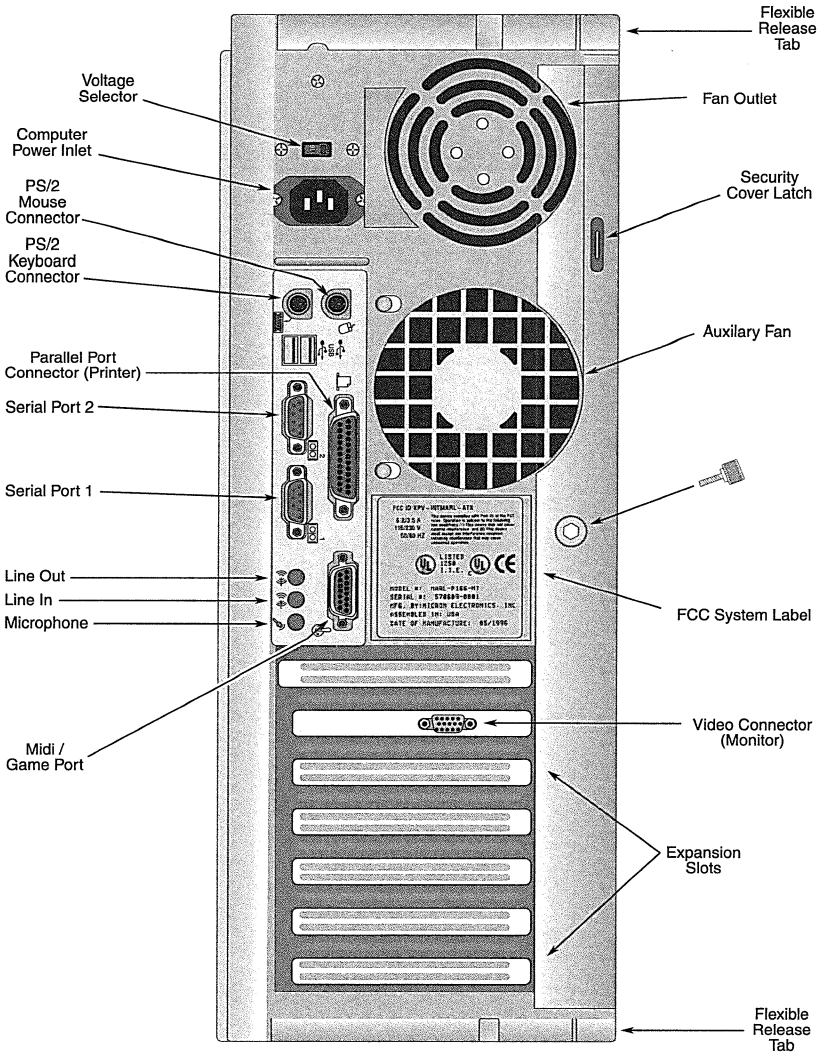


Figure 1-4. Mini Tower Case-Rear

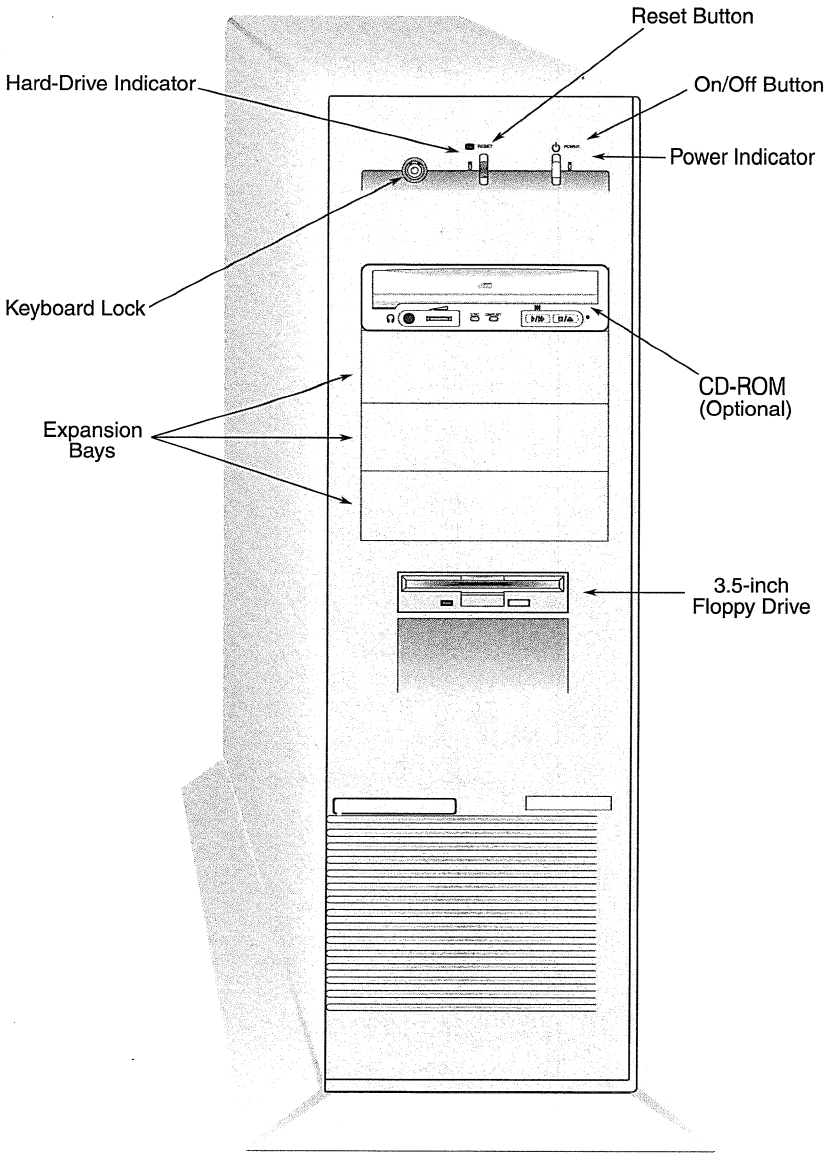


Figure 1-5. Tower Case-Front

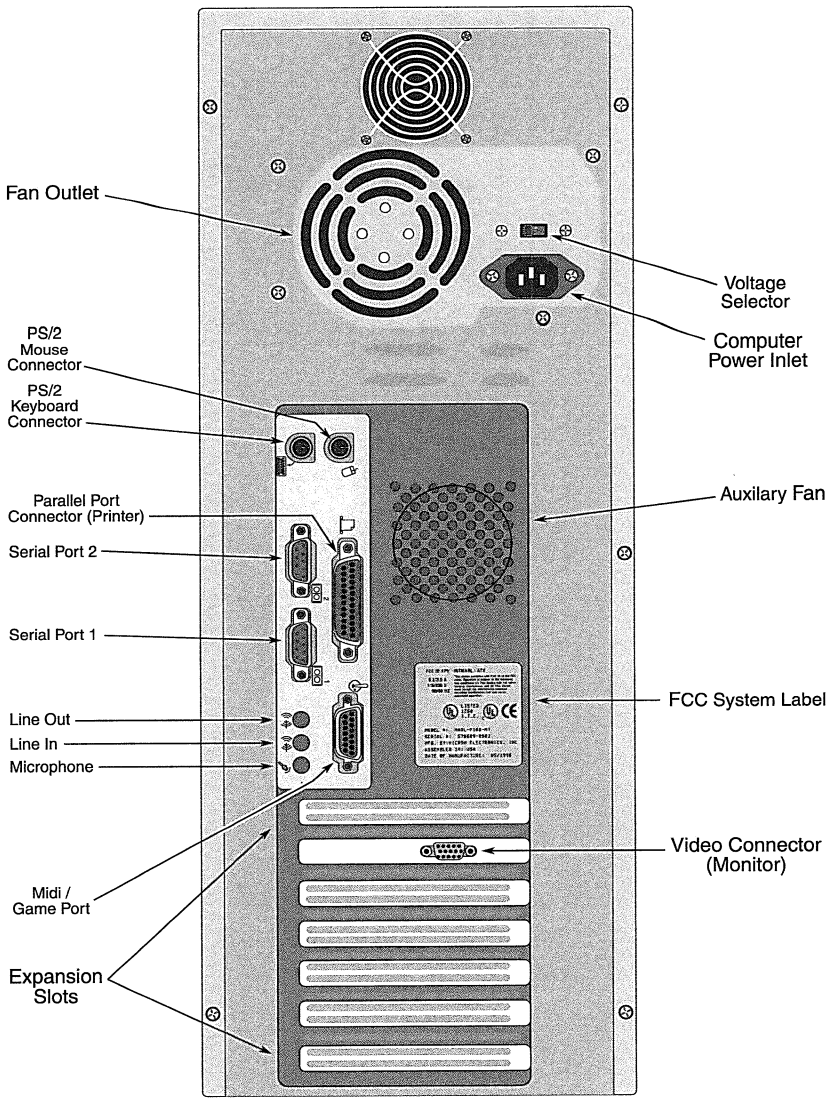


Figure 1-6. Tower Case-Rear

Running Your System for the First Time

1. Power up the monitor. If you are unsure about how to go about this, please refer to the monitor's manual for more information.

2. Remove any floppy disks from the floppy drives.

3. Power up the computer system by firmly pushing and releasing the On/Off button on the front panel of the system. The power indicator should light up and the fan and hard drive should begin to run.

The system diagnostics begins at this time. The keyboard is initialized indicated by the keyboard LEDs blinking momentarily. The Num Lock LED remains on. Next, the screen initializes and a message indicating what type of video adapter is installed. The memory will be counted and tested.

Finally, the system is booted.

If you experience any problems during the power up sequence, please refer to Chapter 4, "Common Problems."

Turning Off Your System

Micron recommends that you power down your system in the following order:

1. Exit all applications you are running and save any changes.

2. Make sure that ALL disk activity has completely stopped. The floppy and hard drive indicator lights should be off and the floppy drive motors should be stopped. Hard disks continue to spin until the system power is shut off.

3. Turn off the computer system, then the monitor.

Maintenance

Operating Environment

Your Micron computer has been manufactured to the highest standards. With proper care, it should provide years of trouble-free service.

To ensure that your system has the longest life possible, it should be placed in an area with good ventilation and low humidity, out of direct sunlight and away from heat sources or lamps. Be sure the rear cooling-fan opening is not obstructed as it is necessary to keep the system cool. Never expose the system to moisture of any sort, for this could lead to fire or shock hazard. Stay away from areas with high levels of dust, dirt, or smoke.

Transporting

Always shut the system off before moving it. Any sudden jar or shock may permanently damage the hard drive. Hard drives are more resistant to shock if they are shut down.

If you are transporting the system over a distance, it is a good idea to completely repackage it in its original packing material. If the original packaging is unavailable, pack all components with as much padding as reasonably possible to ensure that the units are not exposed to excessive vibration or shock.

Cleaning

If the case becomes dirty through constant use or handling, use only a damp, dust-free cloth. Do not use abrasives or solvents as these may mar or scratch the case. Window cleaner and a cloth can be used to clean the monitor, if the monitor has been turned OFF first. Never apply the window cleaner directly to the monitor screen. Always spray the cloth first, then wipe down the screen.

Cleaning kits designed to clean floppy drives are available from most computer stores and should be used periodically.

If you are operating your system in an environment heavy with smoke or dust, you should occasionally open the unit and *with great care,* clean the components with a vacuum (special vacuums are available just for this purpose). Be careful to not loosen any of the components.

If liquid is spilled into the keyboard, immediately unplug it, allow the fluid to drain out by tipping the keyboard upside down, and dry the keyboard overnight before using it again.

Protecting

To prevent normal electrical problems such as spikes or surges, install a power surge/ filter between the power outlet and *all* of the connected components. If even one component is not connected, the entire system could be at risk.

If a severe storm enters your area, completely unplug the entire system from all electrical sources, including phone lines. Lightning can travel in on any line and destroy all connected components.

If possible, do not turn the system on and off frequently. This stresses the power supply and may shorten the life of some components. To restart the system, press the reset button located in the front of the case. If applications are open and the system is reset or if the hard drive is active, data loss will most certainly occur. If you do not use the reset button to restart the system, be sure the hard drive has come to a complete stop before turning the computer on again.

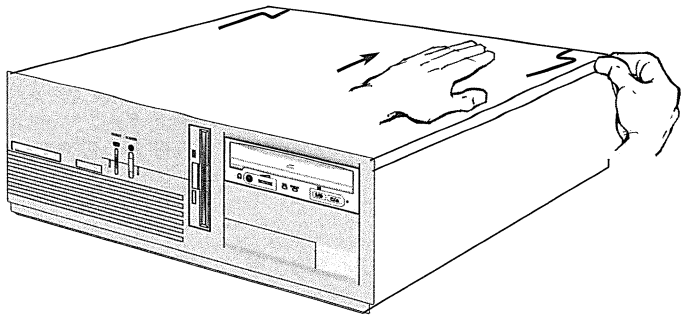
Backing Up

Even with today's technology, data loss can occur at any time. We cannot stress enough that you should back up often. There is a large number of backup systems available from retail and mail-order outlets, including floppy drive backup systems, tape backup systems, and optical backup systems. Any of these alternatives are highly recommended. Complete, frequent backups can save years of data from total and irretrievable destruction. If you require additional information about backup systems or options, please contact Micron Electronics, Inc.

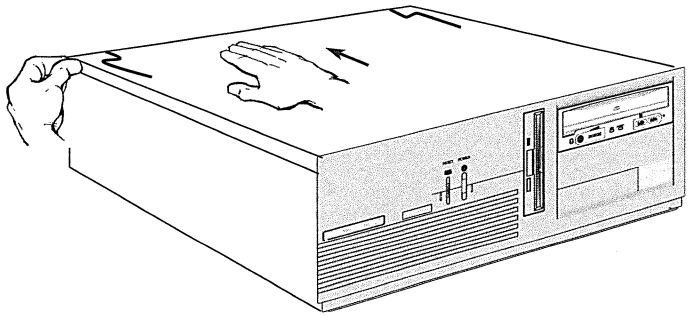
Removing the System Cover

Desktop Case

Refer to the Figures below. No tools are required. It is not necessary to disconnect the cable connectors on the back of the computer before opening the cover. However, note where the cables connect to the back for future reference . (If you have a video camera, a quick scan of the rear case is helpful).



1. Remove the thumb screw located in the top rear center of the lid. While standing in front of the computer, use your right thumb to press in on the right rear release tab. At the same, time place your left hand on the right rear corner of the lid. Push down and rearward about ¾ of an inch, AS SHOWN ABOVE.



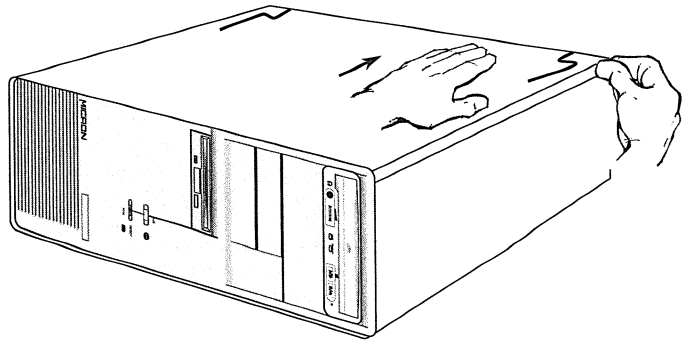
2. Next, use your left thumb to press in on the left rear release tab. At the same time, place your right hand on the left rear corner of the lid. Push down and rearward, about ¾ of an inch, AS SHOWN ABOVE.

3. Grasp the two rear corners of the lid and lift it straight up.

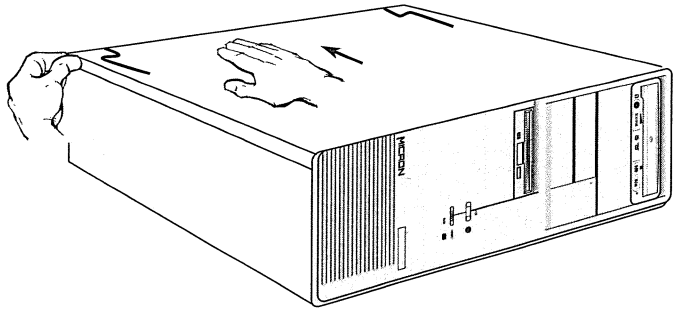
To replace the cover, gently lower the top latching hooks into the top chassis channels before pushing the rear of the cover into place. When the cover is pushed forward the flexiable release tabs will lock into place and the thumb screw can be fully tightened.

Mini Tower Case

Refer to the figures below. No tools are required. It is not necessary to disconnect the cable connectors on the back of the computer before opening the cover. However, note where the cables connect to the back for future reference . (If you have a video camera, a quick scan of the rear case is helpful).Lay the computer on it's right side by rotating it clockwise 90 degrees.



1. Remove the thumb screw located in the top rear center of the lid. While standing in front of the computer, use your right thumb to press in on the right rear release tab. At the same, time place your left hand on the right rear corner of the lid. Push down and rearward about ¾ of an inch, AS SHOWN ABOVE.



2. Next, use your left thumb to press in on the left rear release tab. At the same time, place your right hand on the left rear corner of the lid. Push down and rearward, about ¾ of an inch, AS SHOWN ABOVE.

3. Grasp the two rear corners of the lid and lift it straight up.

To replace the cover, gently lower the top latching hooks into the top chassis channels before pushing the rear of the cover into place. When the cover is pushed forward the flexiable release tabs will lock into place and the thumb screw can be fully tightened.

Tower Case

Refer to the Figure on page 1-19. Use a #2 phillips-head screwdriver or a1/4" hex driver.

1. It is not necessary to disconnect the cable connectors on the back of the computer before opening the cover. However, note where the cables connect to the back for future reference . (If you have a video camera, a quick scan of the rear case is helpful).

2. Remove the screws from the back of the case cover. Keep these screws together (they are a different size than the other screws in your system) for they are not to be interchanged.

3. With flat palms placed on each side of the cover, pull the cover back until the cover's front top lip clears the chassis channel (about 3/4"). Grasp the top-rear of the cover and lift up in one smooth motion until the cover clears the chassis.

To replace the cover, gently lower the top lip of the cover into the chassis channel at an angle before lowering the rear into place. With the lip inserted in the channel, push the rear of the cover forward to seat it flush and replace the screws. Note the metal rail guides located inside the bottom of the cover which must fit over the bottom metal case frame when the cover is replaced.

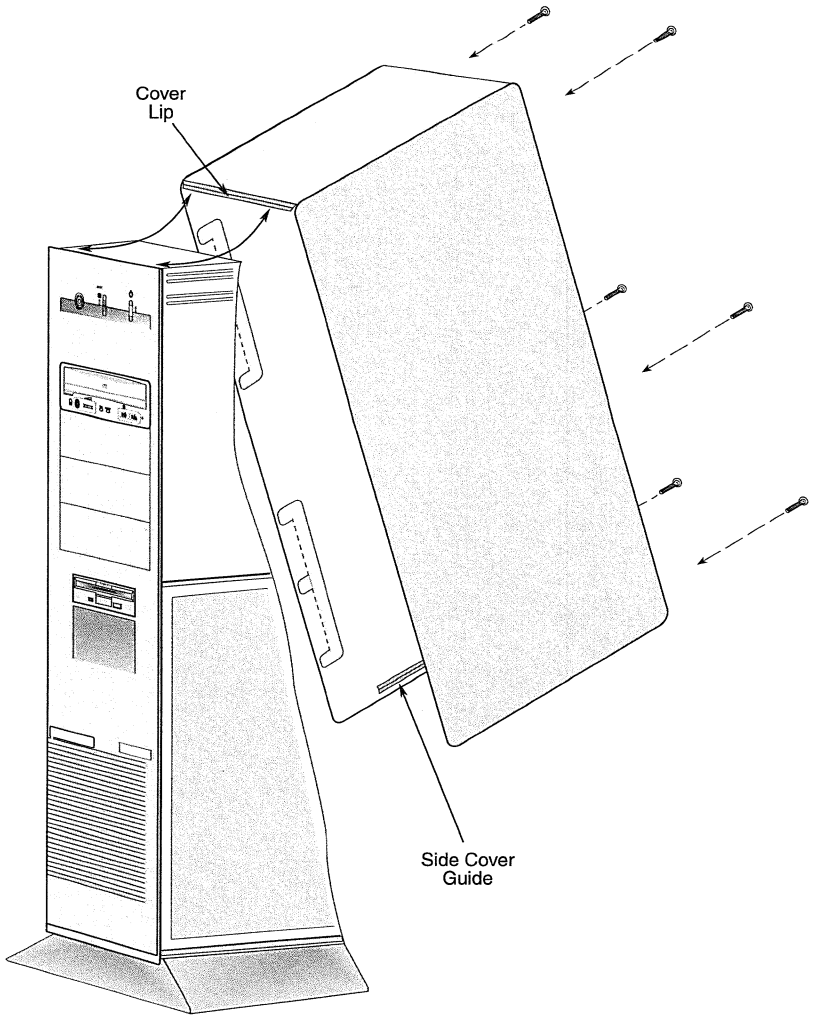


Figure 1-7. Tower Cover Removal

Chapter 2

Technical Information

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Overview

Micron's Millennia Pro2 system board is a high-performance system board designed to be the basis for your personal computer or workstation. The Millennia Pro2 is based on the PCI local bus and the Intel 440HX chip set.

System Features

- ATX extended footprint form factor.
- Two ISA slots, four PCI local bus slots with one ISA/PCI slot being shared.
- 256K L2 Synchronus Cache support.
- Support for up to 512MB of on-board system FPM or EDO memory.
- Support for Dual Pentium Pro Processors.
- IDE Mode 4 support.
- Two high-speed 16550 compatible serial ports.
- Bi-directional parallel port that is EPP (Extended Parallel Protocol) and ECP (Extended Capabilities Port) compatible.
- Intels' 82440FX chip set.
- Floppy controller for two floppy drives (Supports 2.88MB, 1.44MB, 1.2MB, 720KB, and 360KB floppy drives).
- Built in Creative Labs VIBRA 16CL sound.
- Upgradeable 2MB Flash Phoenix EPROM BIOS.

Memory

The Millennia Pro2 system board has two banks of DRAM (four sockets), which provide 512MB maximum memory using on-board DIMMs. This section explains the type of DIMMs supported, lists the rules of adding memory to the system, gives some examples of common memory configurations, and shows how to physically install the new DIMMs.

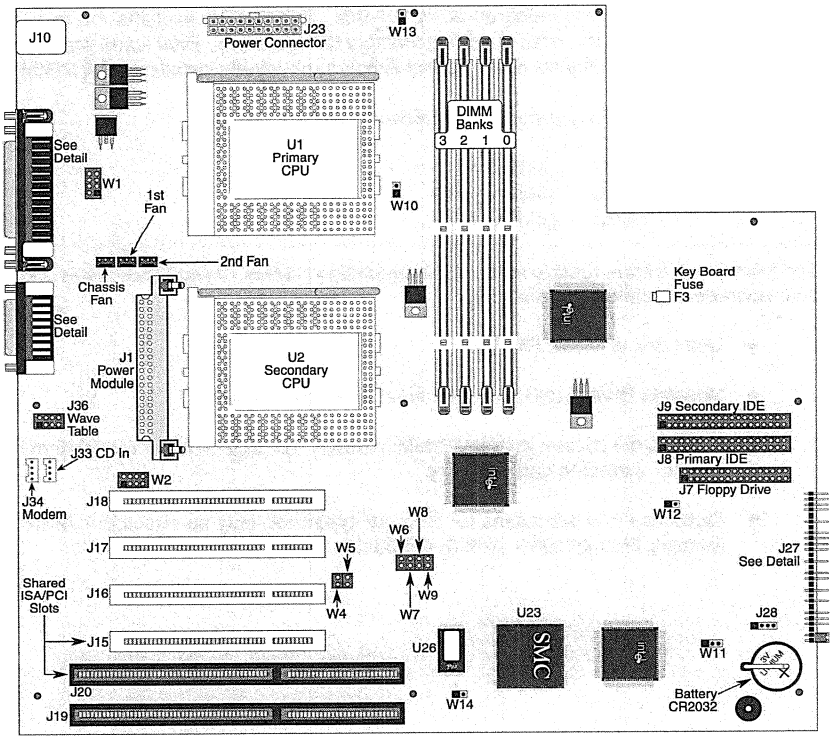
The Micron Millennia Pro2 supports the following 168 pin DIMMs:

16MB	(2MBx64/72)
32MB	(4MBx64/72)
64MB	(8MBx64/72)

The following is a list of rules to follow when upgrading DIMMs. If you follow these rules, your upgrade should be trouble free:

- Use 60ns or faster DIMMs.
- Upgrade DIMMs one bank at a time. Start with bank 0.
- Refer to the section entitled "DIMM Modules" on page 2-13 for more information on upgrading your memory.
- Questions and purchases for memory expansion may be directed to Micron Memory Module sales (1-800-438-3343).

System Board



■ The black square specifies pin 1 of the component (Jumper, Connectors, and Sockets).

Figure 2-1. Millennia Pro2 System Board

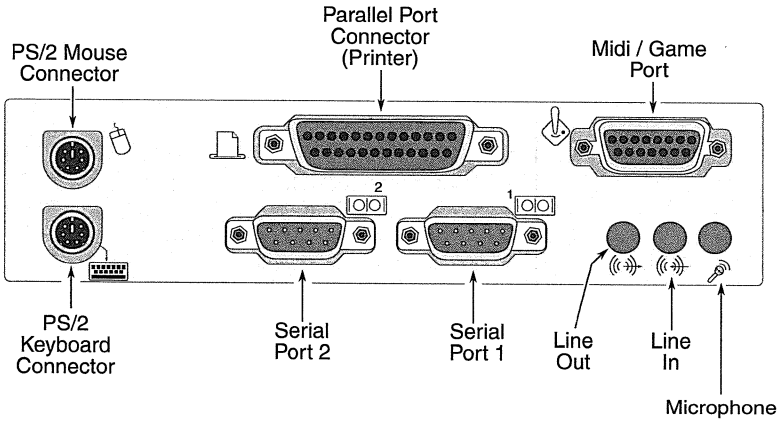


Figure 2-2. Back Panel Connector Layout

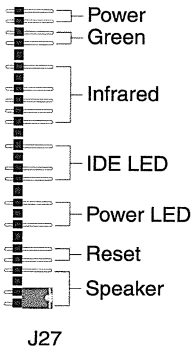


Figure 2-3. J27 Connector Layout

Jumper Settings

Configuration

The jumpers on the Micron Millennia Pro2 are preset at the factory and in most cases do not need to be changed. However, if certain functions need to be changed, the jumpers may need to be reconfigured. The following figure shows an example of a jumper.

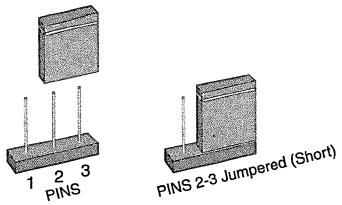


Figure 2-4. Example of a Jumper and Jumper Block

Refer to the following tables to set the jumpers.

CPU Freq. (MHz)	Host Bus Freq. (MHz)	CPU Clock Multiplier	Jumpers					
			W4	W5	W6	W7	W8	W9
200	66	3.0	Open	Short	Short	Short	Open	Short
180	60	3.0	Short	Open	Short	Short	Open	Short
166	66	2.5	Open	Short	Short	Short	Short	Open
150	60	2.5	Short	Open	Short	Short	Short	Open

Figure 2-5. CPU Speed Selection

	Jumpers W1 and W2			
CPU Voltage	1-2	3-4	5-6	7-8
VID Enabled	Open	Open	Open	Open
Non VID 2.9V	Short	Open	Open	Short
Non VID 3.1V	Short	Open	Short	Short
Non VID 3.3V	Short	Short	Open	Short

Figure 2-6. CPU Voltage Selection

Jumper	Function	Pins
W10	Normal	Open
	Reserved	Short

Figure 2-7. Host BUS Agents Jumper

Jumper	Function	Pins
W11	Normal	1-2
	Clear CMOS	2-3

Figure 2-8. Clear CMOS Jumper

Jumper	Host BUS Speed	ISA BUS Speed	Pins
W12	60MHz	7.50MHz	Open
	66MHz	8.25MHz	Short

Figure 2-9. ISA BUS Clock Jumper

Jumper	Function	Pins
W13	Normal	Open
	Reserved	Short

Figure 2-10. System Power Supply Jumper

Jumper	Function	Pins
W14	Enable Sound	Short
	Disable Sound	Open

Figure 2-10. Onboard Sound Jumper

Jumper	Function	Notes
J1	Voltage Regulator Module	For Secondary CPU
J3, J4, J5, J6	DRAM, 168 pin DIMM sockets	3.3 volts only. Buffered DIMMs Supported
J8	Primary IDE Port Connector	
J9	Secondary IDE Port Conn.	
J10	PS/2 Mouse Connector PS/2 Keyboard Connector	Upper Level Lower Level
J12	Serial Port A Connector	
J13	Serial Port B Connector	
J14	Parallel Port Connector	Upper Level
J23	Power Supply Connector	ATX Standard
J27	Front I/O Connector	
J27	Power On/OFF	1 = Power; 2 = Ground
J27	Reset Switch	12 = Reset; 13 = Ground
J27	PC Speaker	14 = Speaker; 17 = +5VDC
J27	Power On LED	18 = Positive; 20 = Ground
J27	Keylock Switch	21 = Keylock; 22 = Ground
J27	IDE LED	23 = Positive; 24 = Negative

Figure 2-11a. Case and Peripheral Connectors

Jumper	Function	Notes
J28	Infrared Port Connector	1 = Receive Data; 2 = Ground; 3 = Transmit Data; 4 = +5V Power.
J29, J30	CPU Fan	1 = +12V Power; 2 = Ground; 3 = Status (running or stopped).
J31	Chassis Fan	1 = +12V Power; 2 = Ground; 3 = Status (running or stopped).
J34	Modem/Telephony	1 = No Connect; 2 = MIC Out; 3 = Ground; 4 = Speaker Input.
J35	Game Port / MIDI MIC Input	Upper Level Lower Level
J36	Wavetable	1 = Right Channel Input; 2 = Ground; 3 = Left Channel Input; 4 = Ground; 5 = No Connect; 6, 7, & 8 = Ground.

Figure 2-11b. Case and Peripheral Connectors

Installing Add-On Peripherals

The Millennia Pro2 accommodates ISA and PCI Local Bus cards. Extra DRAM can also be added to the system board. The following describes how to install the PCI card and DRAM memory.

PCI Local Bus Card

PCI Local Bus slots accommodate most PCI-approved Local Bus cards. To install a PCI Local Bus card:

1. Power OFF the computer system.
2. Locate an unused PCI slot on the system board.
3. Insert the card with the bottom edge level. Never insert the card at an angle.
4. Holding the card at the center of the top edge, gently push straight in. Do not force the card into place. If it does not fit, take it out and try again.
5. Make sure the card is fully inserted.
6. Secure the card with a bracket screw.

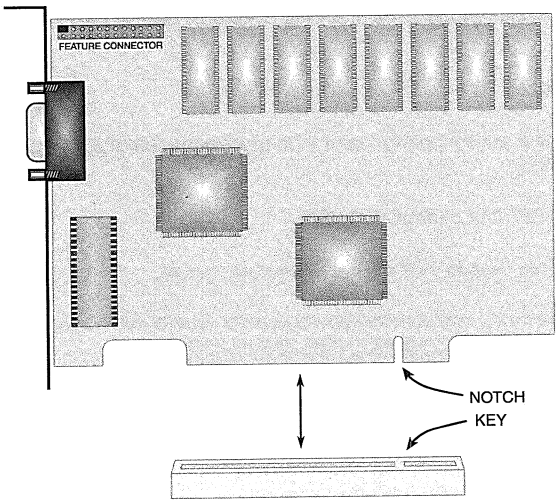


Figure 2-12. Installing a PCI Local Bus Card

NOTE: The ISA slot (J20) and the PCI slot (J15) are "shared slots." When a PCI card is installed into the (J15) PCI slot, the (J20) ISA slot is disabled. Conversely, when a peripheral card is installed into the (J20) ISA slot, the (J15) PCI slot is disabled.

DIMM Modules

The memory in this system can be increased up to a maximum of 512MB by installing DIMMs (dual in-line memory modules). To install DIMMs, first locate the memory banks on the system board (refer to Figure 2-1). Follow the table on page 2-17 for the possible installation combinations.

CAUTION: Modules are Electrostatic Sensitive.

Even a small electrostatic discharge could damage the module. A damaged module might not fail immediately, but over time it will become worse, possibly causing an "intermittent" problem. Be very careful to handle the boards ONLY by the edges. DO NOT touch the gold/silver edge-connectors or any of the components on the board. Leave the module in the antistatic bag until ready for installation.

1. Switch the computer off. Leave the computer plugged in to the outlet to provide an electrical ground to discharge static electricity.

2. Touch the metal case of the power supply or the metal lining inside the computer case. This will drain the static charge from your body and will keep the modules from being electrically damaged.

3. Keep body movement to a minimum as you remove and handle the modules. Antistatic wrist straps with clip-on ends are commercially available.

Installing DIMM Modules

The Millennia Pro2 has four, 64-bit or 72-bit (168-pin) DIMM sockets on-board and can accommodate EDO or FPM memory from 8MB up to 512MB using the following DIMM sizes:

16MB - organized as 2MB x 64/72

32MB - organized as 4MB x 64/72

64MB - organized as 8MB x 64/72

The four sockets are arranged as Bank 0 through Bank 3, with each bank consisting of one socket and providing a 64-bit wide data path. EDO and FPM can be configured in the same system. There are no jumper settings required for the memory size or type, which is automatically detected by the system BIOS. Gold leaded DIMMs are required to be used when adding system memory.

Step 1: Using both hands, carefully set the DIMM into the center of the left and right latching levers. Center the module over the socket so that the notches are aligned with the socket keys. Do not force it in or damage may result. Note that the DIMM modules are keyed in such a way that they cannot be inserted incorrectly (refer to the figure below). If you are having difficulty placing them into the socket, check to see that you are not attempting to insert them backwards.
Do not lock the module into position at this time.

Step 2: Check to make sure the module is centered in the socket, and that the connector pins of the module line up with the socket connector pins.

A) Be sure the module is centered and connector pins are aligned.
B) When the module is locked in place, be sure both latching levers are fully seated into latching notches in the sides of the DIMMs.

Step 3: Using both hands and applying equal pressure on each end of the module, lock the module into the socket by pushing downward with the thumbs and squeezing inward with the forefingers. Make sure both latching levers have seated fully into the modules latching notch. The module should now be standing upright in the socket . Refer to the fully seated drawing on the following page.

WARNING: Failure to observe proper insertion guidelines may result in damage to the DIMM and/or the socket.

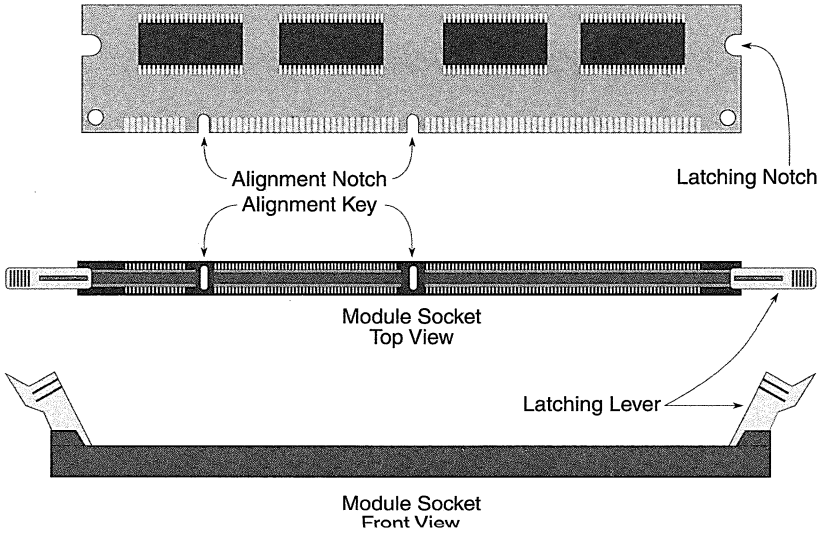


Figure 2-13. Proper DIMM Insertion

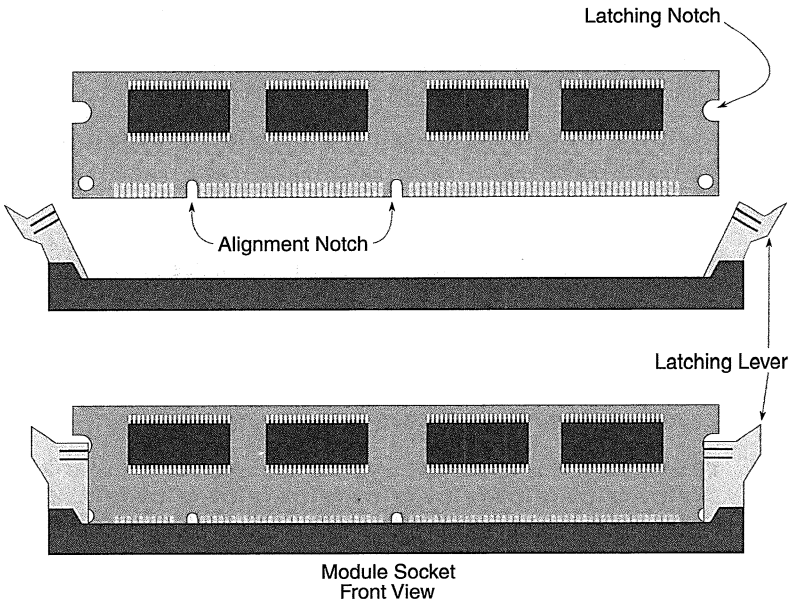


Figure 2-14. DIMM Fully Seated

Removing DIMM Modules

To remove DIMM modules, simply reverse the installation procedure with the following differences. Using the thumbs of both hands, gently pry the latching levers open so they no longer hold the module in the socket. Gently lift the module upward to clear the latching levers.

DRAM Memory

The following table lists some of the possible memory size combinations usable for the installation of DIMMs.

Total	Bank 0	Bank 1	Bank 2	Bank 3
16MB	16MB			
32MB	16MB	16MB		
32MB	32MB			
48MB	16MB	16MB	16MB	
48MB	32MB	16MB		
64MB	16MB	16MB	16MB	16MB
64MB	32MB	32MB		
64MB	64MB			
80MB	32MB	16MB	16MB	16MB
96MB	32MB	32MB	32MB	
96MB	64MB	16MB	16MB	
96MB	64MB	32MB		
112MB	64MB	16MB	16MB	16MB
112MB	64MB	32MB	16MB	
128MB	32MB	32MB	32MB	32MB
128MB	64MB	32MB	16MB	16MB
128MB	64MB	32MB	32MB	
128MB	64MB	64MB		
160MB	64MB	64MB	32MB	
160MB	64MB	64MB	16MB	16MB
192MB	64MB	64MB	64MB	
192MB	64MB	64MB	32MB	32MB
256MB	64MB	64MB	64MB	64MB

Figure 2-15. DRAM Memory Configuration

Chapter 3

The BIOS Setup Program

Setup **3-2**
BIOS Setup 3-2
When Setup Should be Run 3-2
How to Run the Setup Program **3-3**
Setting the CMOS Main Screen 3-5
Setting the CMOS Advanced Screen 3-9
Setting the CMOS Security Screen 3-11
Setting the CMOS Boot Screen 3-13
Exiting/Saving the CMOS Selections **3-14**

SETUP

BIOS Setup

Every AT-compatible computer has a battery supported CMOS memory location that stores information about the system and peripheral configuration. Because of the attached battery, the CMOS is constantly provided with power, even when the computer has been turned off.

During the boot sequence, a special software application called the BIOS (Basic Input Output System), located in read-only (ROM) memory on the system board, reads the information contained in the CMOS and configures the CPU and other peripheral devices. If the CMOS information is incorrect, the system may not operate correctly until accurate information is stored in the CMOS. The Setup Program has been built into the system to provide the means for changing the CMOS.

When Setup Should Be Run

Although your system arrives fully configured, the system may need to be adjusted to fit your needs.

Whenever peripherals are added or removed from the system (for example, if you add a hard disk or more memory), you must run Setup to inform the system about the new configuration.

If the information in CMOS is lost, the system will not operate properly unless Setup is used to restore the system configuration.

How to Run the Setup Program

The Setup program is used to configure the computer's BIOS (Basic Input/Output System). The computer's BIOS is responsible for configuring the motherboard and providing hardware information to the operating system. In order for the computer to run properly, run the Setup procedure after first installing the system board and whenever you make a hardware change to the system.

After the system is turned on and goes through a memory test, the Power-Up Screen (Figure 3-1) appears on your monitor:

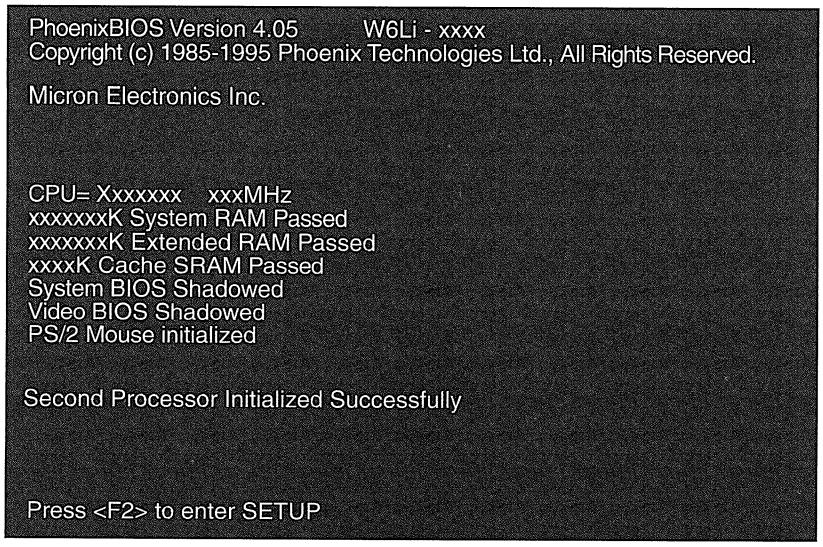

PhoenixBIOS Version 4.05 W6Li - xxxx
Copyright (c) 1985-1995 Phoenix Technologies Ltd., All Rights Reserved.
Micron Electronics Inc.
CPU= Xxxxxxx xxxMHz
xxxxxxxK System RAM Passed
xxxxxxxK Extended RAM Passed
xxxxK Cache SRAM Passed
System BIOS Shadowed
Video BIOS Shadowed
PS/2 Mouse initialized
Second Processor Initialized Successfully
Press <F2> to enter SETUP

Figure 3-1. Power-Up Screen

When "Press <F2> to enter SETUP" appears at the bottom of the screen, press the <F2> key to begin the Setup procedure. The CMOS Main Screen (Figure 3-2) should appear and the prompt should be on the time line. The Setup procedure can only be activated during the boot sequence.

The Millennia Pro2 system board has the following CMOS configuration screens:

- Main Screen
- Advanced
- Security
- Boot
- Exit

Each screen configures specific parameters for the Millennia Pro2 system board. The following section is an overview of each screen and their functions.

Setting the CMOS Main Screen

The CMOS Main Screen (Figure 3-2) is used to set the time and date, to set the floppy drive types, to configure the hard disks, and to configure the video. To move between the categories, use the up arrow and the down arrow keys.

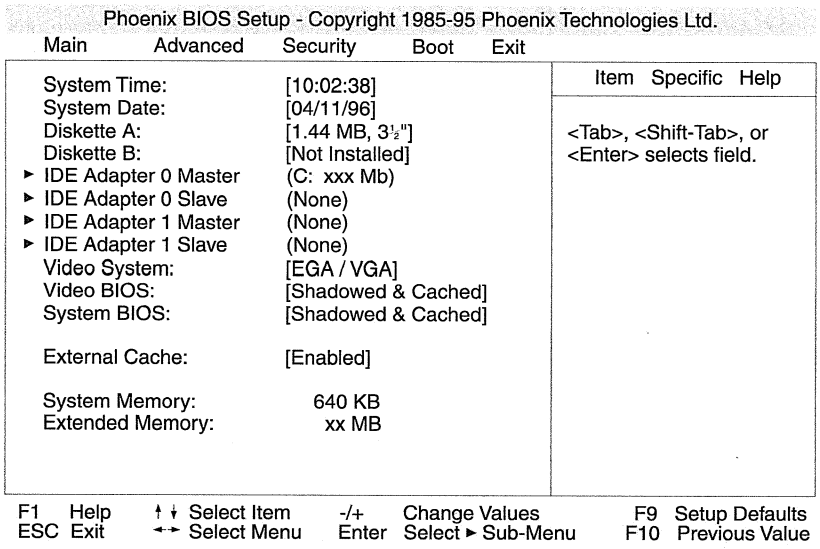

Phoenix BIOS Setup - Copyright 1985-95 Phoenix Technologies Ltd.
Main Advanced Security Boot Exit
System Time: [10:02:38]
System Date: [04/11/96]
Diskette A: [1.44 MB, 3½"]
Diskette B: [Not Installed]
► IDE Adapter 0 Master (C: xxx Mb)
► IDE Adapter 0 Slave (None)
► IDE Adapter 1 Master (None)
► IDE Adapter 1 Slave (None)
Video System: [EGA / VGA]
Video BIOS: [Shadowed & Cached]
System BIOS: [Shadowed & Cached]
External Cache: [Enabled]
System Memory: 640 KB
Extended Memory: xx MB
Item Specific Help
<Tab>, <Shift-Tab>, or <Enter> selects field.
F1 Help ↑ ↓ Select Item -/+ Change Values F9 Setup Defaults
ESC Exit ←→ Select Menu Enter Select ► Sub-Menu F10 Previous Value

Figure 3-2. Main Screen

System Time and Date

To set the time, use the <-> key to decrease the number and the <+> key to increase the number. To move the prompt forward, use the <Tab> key; to move the prompt backward, use the <Shift-Tab> key. To set the date, use the up and down arrows to highlight the System Date and follow the same procedure used to set the time.

Diskette A or B

To configure a floppy drive added to or removed from your computer, use the up and down arrow keys to select the desired drive. Use the <+/-> keys to change the setting until it matches the floppy drive you installed. The BIOS supports 2.88MB, 1.44MB, 1.2MB, 720KB, and 360KB floppy drives.

IDE Devices (Hard Disk Setup)

If you are setting up a SCSI hard disk, you will probably need to select [None] in the IDE Device parameters (see your SCSI card manual for more details).

To install an IDE device, select the device you wish to configure and press <Enter>. The IDE Device submenu will appear. (Figure 3-3).The easiest way to set your IDE devices is to let the BIOS do it for you. When the IDE Device submenu first appears, the Autotype Fixed Disk selection will be highlighted. Simply press <Enter>, and the remaining information will automatically be entered.Do not adjust the rest of the settings unless absolutely necessary. The BIOS will automatically enter the optimal settings.

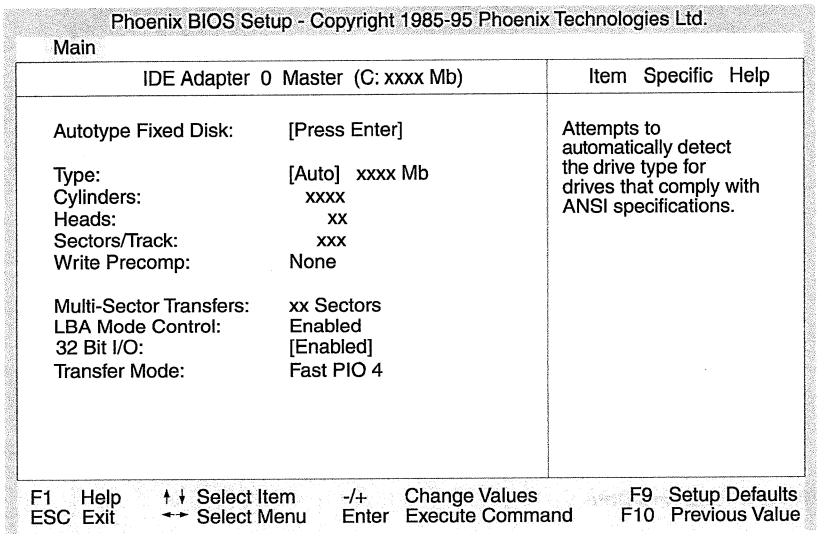

Phoenix BIOS Setup - Copyright 1985-95 Phoenix Technologies Ltd.
Main
IDE Adapter 0 Master (C: xxxx Mb)
Item Specific Help
Autotype Fixed Disk: [Press Enter]
Type: [Auto] xxxx Mb
Cylinders: xxxx
Heads: xx
Sectors/Track: xxx
Write Precomp: None
Multi-Sector Transfers: xx Sectors
LBA Mode Control: Enabled
32 Bit I/O: [Enabled]
Transfer Mode: Fast PIO 4
Attempts to automatically detect the drive type for drives that comply with ANSI specifications.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
ESC Exit ←→ Select Menu Enter Execute Command F10 Previous Value

Figure 3-3. IDE Adapter Master or Slave Screen

Autotype Fixed Disk

This selection automatically identifies the type of IDE hard drives that comply with ANSI specifications. Press <ENTER> to automatically identify your IDE hard drive.

Type

This selection allows you to select the specific hard drive installed in the system. The options include NONE, USER, and 1 THRU 39.

Multi-Sector Transfers

This selection determines the number of sectors per block for Multiple Sector Transfers. AUTO refers to the size the disk returns when queried. The selectable options include:

- Disabled
- Auto
- 2 Sectors
- 4 Sectors
- 8 Sectors
- 16 Sectors

LBA Mode Control

This option enables the LBA (Logical Block Addressing) disk addressing. This selection should only be enabled to support IDE drives with more than 1024 cylinders. The selection is either ENABLED or DISABLED.

32 Bit I/O

This option enables 32 bit data transfers for faster disk performance.

Transfer Mode

This option selects the transfer modes for the on-board PCI IDE controller. The selectable options include:

- FAST PIO 4 - minimum cycle time of 120 ns (16 MB/sec)
- FAST PIO 3 - minimum cycle time of 180 ns (11.1 MB/sec)
- FAST PIO 2 - minimum cycle time of 240 ns (8.33 MB/sec)
- FAST PIO 1 - minimum cycle time of 383 ns (5.22 MB/sec)
- STANDARD - minimum cycle time of 600 ns (3.33 MB/sec)

Cache Video BIOS Area

Choose SHADOWED & CACHED to cache the video BIOS. This option can also be set to SHADOWED or DISABLED.

Cache System BIOS Area

Choose SHADOWED & CACHED to cache the system BIOS. This option can also be set to SHADOWED or DISABLED.

Extenal Cache

Choose ENABLED or DISABLED to set Level 2 cache.

System Memory

The System Memory category identifies the size of the base memory. It cannot be changed.

Extended Memory

The Extended Memory category automatically detects the amount of memory installed above the amount in the System Memory category. Because the BIOS automatically calculates the amount of memory installed in your system, you cannot change this category without adding or removing memory.

Setting the CMOS Advanced Screen

The Advanced Screen (Figure 3-4) sets up the Integrated Peripherals. Use the up and down arrows to select a menu and press <Enter>.

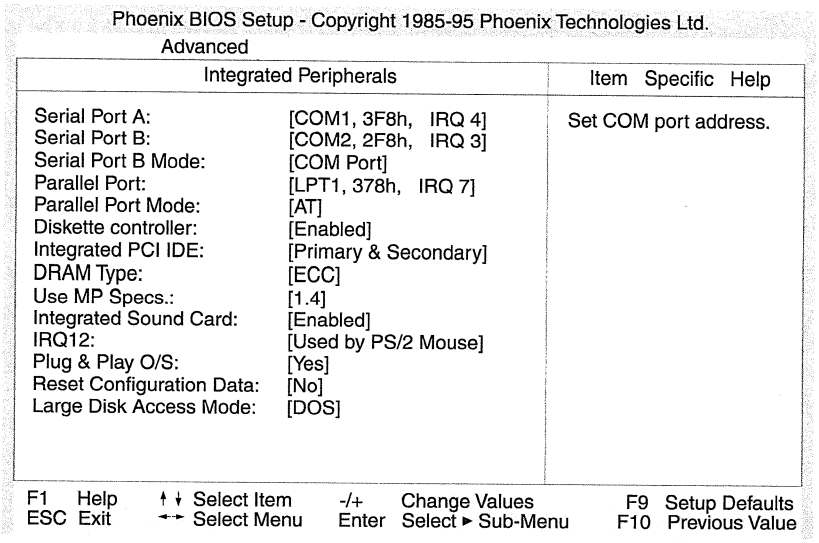

Phoenix BIOS Setup - Copyright 1985-95 Phoenix Technologies Ltd.
Advanced
Integrated Peripherals
Item Specific Help
Serial Port A: [COM1, 3F8h, IRQ 4]
Serial Port B: [COM2, 2F8h, IRQ 3]
Serial Port B Mode: [COM Port]
Parallel Port: [LPT1, 378h, IRQ 7]
Parallel Port Mode: [AT]
Diskette controller: [Enabled]
Integrated PCI IDE: [Primary & Secondary]
DRAM Type: [ECC]
Use MP Specs.: [1.4]
Integrated Sound Card: [Enabled]
IRQ12: [Used by PS/2 Mouse]
Plug & Play O/S: [Yes]
Reset Configuration Data: [No]
Large Disk Access Mode: [DOS]
Set COM port address.
F1 Help
ESC Exit
↑↓ Select Item
←→ Select Menu
-/+ Change Values
Enter Select ▸ Sub-Menu
F9 Setup Defaults
F10 Previous Value

Figure 3-4. Advanced Screen

Serial Port A

Serial Port A may be set for Auto, COM1, COM2, COM3, COM4 or Disabled.

Serial Port B

Serial Port B may be set for Auto, COM1, COM2, COM3, COM4 or Disabled.

Serial Port B Mode

Serial Port B Mode may be set for COM Port, IrDA or ASKIR. This selection sets the interface to standard or infrared.

Parallel Port

The parallel port may be set for Auto, LPT1, LPT2, LPT3 or may be disabled.

Parallel Port Mode

The parallel port may be set for output mode (AT), bidirectional mode (PS/2), Extended Capabilities Port (ECP) or Disabled.

Diskette Controller

The floppy disk controller may be enabled or disabled.

Integrated PCI IDE

Enables the integrated Local Bus IDE adapter. The PCI IDE controller may be set for Primary (up to two hard disks), Primary and Secondary (up to four hard disks) or it may be disabled.

DRAM Type

This selection lets you choose the type of memory being used. The options are: ECC, Non-Parity and Parity.

Use MP Specs

This selection defines which version of the Multiprocessor specifiction is to be used. The options are: 1.1 and 1.4, with 1.4 being the most recent.

Integrated Sound Card

This selection enables or disables the onboard sound controller.

IRQ12 Used By

This selection routes IRQ12 from the PS/2 Mouse (default) to the ISA bus.

Plug & Play O/S

This selection, when set to Yes, allows the system to work with a Plug and Play operating system such as Windows 95.

Reset Configuration Data

Select Yes to clear the system configuration data.

Large Disk Access Mode

If you are using a DOS operating system (MS-DOS, DR-DOS, or PC-DOS), set to DOS (default). If you are using anything else, set to OTHER.

Setting the CMOS Security Screen

The Security Screen (Figure 3-5) controls access to the computer. The security screen allows for settings of two passwords. The Supervisor Password allows access to the system and Setup. The User Password will allow access to the system, but not to all Setup features.

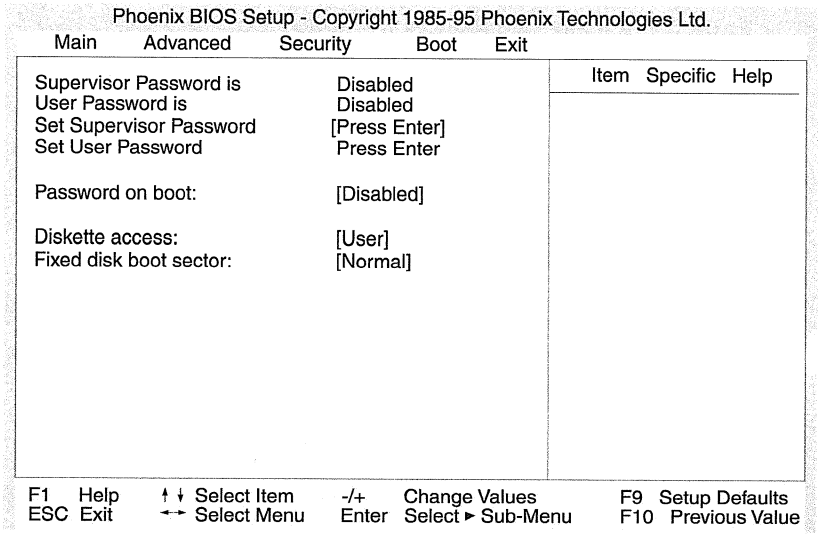

Phoenix BIOS Setup - Copyright 1985-95 Phoenix Technologies Ltd.
Main Advanced Security Boot Exit
Item Specific Help
Supervisor Password is Disabled
User Password is Disabled
Set Supervisor Password [Press Enter]
Set User Password Press Enter
Password on boot: [Disabled]
Diskette access: [User]
Fixed disk boot sector: [Normal]
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
ESC Exit ←→ Select Menu Enter Select ▸ Sub-Menu F10 Previous Value

Figure 3-5. Security Screen

Supervisor Password

If a Supervisor Password is set up for the system, it reads Enabled. If the password is not set up, it reads Disabled.

User Password

If a User Password is set up for the system, it reads Enabled. If the password is not set up, it reads Disabled.

Set Supervisor Password

Type the password and press the ENTER key. Retype the password and press the ENTER key again. Write down the password somewhere safe so it will not be forgotten. The password may be disabled by setting the new password to nothing (pressing the ENTER key without first typing a password).

WARNING

If you forget the Supervisor Password, it cannot be disabled without discharging the CMOS.

Set User Password

Follow the same procedure used to set the Supervisor Password.

NOTE:

After a password is entered, it is saved immediately.All other changes may still be discarded (see Exit Screen).

Password on Boot

When enabled, the system requires a password upon power-up. Either the Supervisor or User Password may be entered.

Diskette Access

This selection allows floppy disk access with an option of the supervisor or user. Selecting Supervisor gives floppy disk access to the supervisor only. Selecting User gives floppy disk access to both the user and the supervisor. If the passwords are enabled, this option may only be changed by the supervisor.

Fixed Disk Boot Sector

This selection allows the boot sector of the fixed disk to be write protected. The default setting is Normal. When set for Write Protect, it serves as a form of virus protection. If the passwords are enabled, this option may only be changed by the supervisor.

Setting the CMOS Boot Screen

The Boot Screen (Figure 3-6) provides choices for the order in which the system boots. Prompt, POST and Numlock choices are also provided.

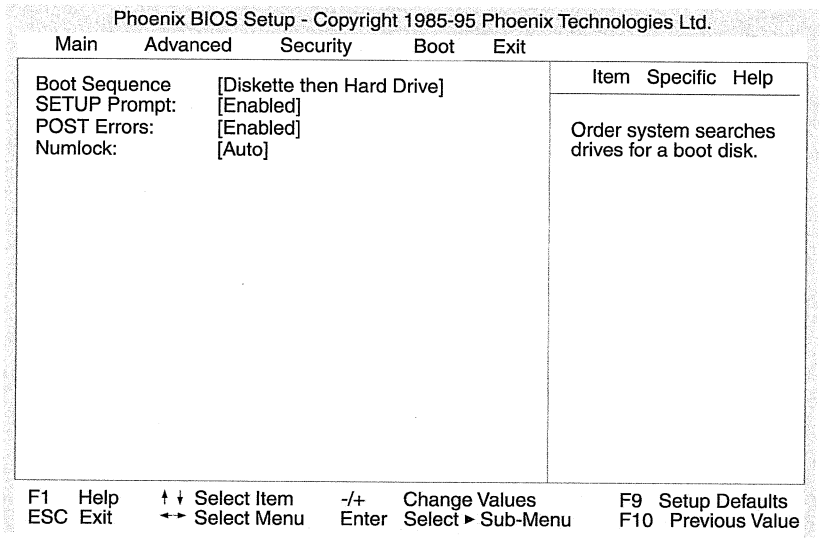

Phoenix BIOS Setup - Copyright 1985-95 Phoenix Technologies Ltd.
Main Advanced Security Boot Exit
Boot Sequence [Diskette then Hard Drive]
SETUP Prompt: [Enabled]
POST Errors: [Enabled]
Numlock: [Auto]
Item Specific Help
Order system searches drives for a boot disk.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
ESC Exit ←→ Select Menu Enter Select ▸ Sub-Menu F10 Previous Value

Figure 3-6. Boot Screen

Boot Sequence

This category selects the order of the drives the system will boot from:

Diskette then Hard Drive
Hard Drive then Diskette
Hard Drive Only

SETUP Prompt

When enabled, this category allows the system to display the "Press <F2> to enter SETUP" message during boot.

Post Errors

When enabled, this category causes the system to display the "Press <F1> to resume, <F2> to SETUP" and pause if errors occur during boot. If disabled, the system will ignore any errors and will always attempt to boot.

Numlock

This category selects the power-on state for the NUMLOCK during boot. Selections are Auto, On, or Off.

Exiting/Saving the CMOS Selections

After you have completed configuring the BIOS, select the Exit Screen (Figure 3-7).

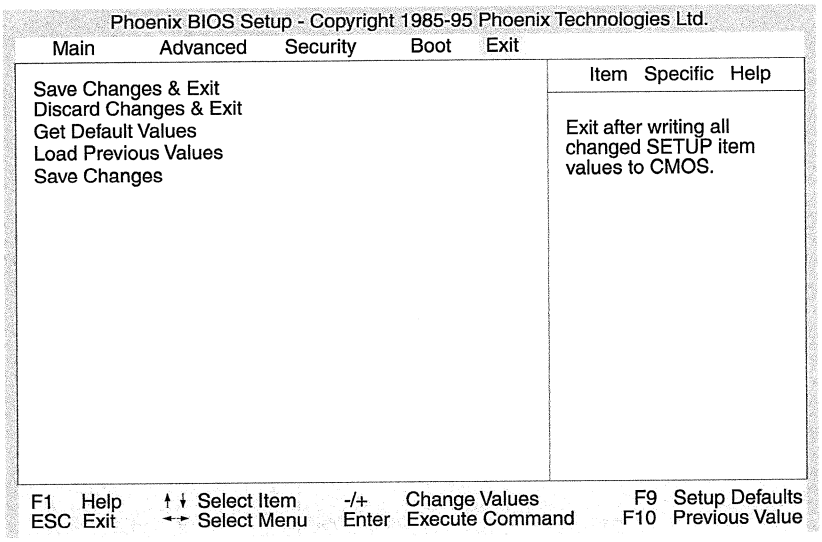

Phoenix BIOS Setup - Copyright 1985-95 Phoenix Technologies Ltd.
Main Advanced Security Boot Exit
Item Specific Help
Save Changes & Exit
Discard Changes & Exit
Get Default Values
Load Previous Values
Save Changes
Exit after writing all changed SETUP item values to CMOS.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
ESC Exit ←→ Select Menu Enter Execute Command F10 Previous Value

Figure 3-7. Exit Screen

Save Changes & Exit

This section saves your changes, exits the setup, and reboots the computer with the new changes to BIOS.

Discard Changes & Exit

This section will ignore all changes you have made to the screens, exits the setup and reboots the computer using the previous CMOS settings.

Get Default Values

Loads all factory default values for all setup items, exits the setup and reboots the computer using the factory default values.

Load Previous Values

Loads previous values from CMOS for all setup items, exits the setup and reboots the computer.

Save Changes

Writes all BIOS settings to CMOS, exits the setup and reboots the computer with the new BIOS values.

Chapter 4

Common Problems

Introduction **4-2**
Problems During Boot 4-2
System Problems 4-6
Hard Disk Problems 4-9

Introduction

Occasionally while setting up and configuring a computer system, an error may occur or an important element may be forgotten. This section provides information regarding the most frequently encountered problems, as well as many quick and simple solutions. If you continue to experience problems and this section fails to provide solutions, please feel free to contact Micron technical support (see Appendix A: Contacting Technical Support).

Problems During Boot

Problem

When the power switch is turned on, the system does not power up (i.e., the exhaust fan does not run, the power indicator light is not illuminated, the hard disk does not begin to spin, etc.), and no audible "beep" is heard.

Possible Cause

- The power cable is unplugged or defective.
- Voltage switch is improperly set.
- No power at outlet.
- Bad power supply.

Solutions

- Check to ensure the power cable is plugged in correctly and firmly. Try a second power cable, if available, or test the cable for continuity. Replace original cable if it is found to be defective.
- Check the red voltage switch (located at the rear of the unit near the fan) and ensure that it is set for the proper voltage (115V in the U.S. and Canada).
- Check the outlet with another appliance (e.g., a lamp).
- If a surge suppresser or Uninterruptable Power Supply (UPS) is being used, temporarily bypass the surge suppresser and plug the unit directly into the wall outlet. The surge suppresser or UPS may be faulty.

Problem

When the power switch is turned on, the system has power (i.e., the exhaust fan runs, the power indicator light is illuminated, the hard disk begins to spin, etc.), but the system appears dead. Generally the keyboard LEDs will stay on.

Possible Cause

- The monitor may not be turned on or plugged in.
- A peripheral card may not be seated correctly on the system board.
- A peripheral card may be defective.
- A floppy drive may be defective.

Solutions

- Check to make sure the monitor power cable is plugged into the wall outlet and the back of the monitor. Also verify the monitor video cable is plugged into the video card in the back of the computer. Check the monitor to ensure that the power is on. If you suspect a problem with the monitor, please refer to the manual that was provided with it.

- Carefully open the system unit. Press down firmly on all peripherals in the expansion slots.

- With the system power shut off, remove one peripheral card, power up the system, and wait a few moments to see if the keyboard lights turn off. If they don't turn off, repeat the above steps with the next peripheral card until all have been removed. After this has been completed, contact Micron technical support for further assistance.

- With the system power shut off, completely disconnect one of the floppy drives and power up the system. If the keyboard lights do not turn off after a few moments, repeat the above procedure until all drives are disconnected. After this has been completed, contact Micron technical support for further assistance.

- Contact Micron technical support if none of the above procedures is effective.

Problem

System powers on, the display works, but the system does not complete the boot process or you see one of the following error messages:

"Hard disk Controller Failure."
"Fixed Disk Configuration Error."
"Operating System Not Found."

Possible Cause

- Hard drive is incorrectly set up in CMOS.
- Hard drive cable may not be properly connected.
- CMOS may have lost settings.
- SCSI controller card may have lost settings.
- Files on hard drive may be corrupted.
- Hard drive may be defective.

Solution

- If you have a SCSI hard drive, make sure that the CMOS says Not Installed for all hard disk drives. For help in getting to your CMOS settings, see Chapter 3- The BIOS Setup Program.

- For an IDE drive - check the parameters of the hard drive. Have the system re-Autodetect the settings of the drive. To do this, highlight the first hard disk from the MAIN screen of your CMOS Setup (labeled Primary IDE Master) and press the <Enter> key. On the next screen press <Enter> again and select AUTO CONFIGURED. Press <Enter> and the system should reassign the proper values to the hard drive. You will also want to make sure that the primary IDE controller is enabled. To verify, move to the ADVANCED section of CMOS and press <Enter> on the line that says PERIPHERAL CONFIGURATION. Press <Enter> again and select AUTO. Exit and save your changes.

- With the power OFF, carefully open the system unit. Reset the gray ribbon cable that is connected to the hard drive and to the motherboard or SCSI Controller Card. To assist you, the colored stripe going down the side of the gray controller cable signifies pin one and should be connected to pin one of the controller and drive. Also, check to ensure that the power connector in the Hard Drive is secure. Power the system back up and perform an AUTODETECT of the hard drive again.

Problem

The system displays the error message "Non-system Disk or Disk Error" or "Operating System Not found."

Possible Cause

- The System files are missing from the Boot Sector of the hard drive.
- The diskette in Drive A: is not bootable.
- CMOS is incorrectly configured.

Solutions

- Your system is designed to first check the floppy drive for a bootable diskette. If there is a diskette in the floppy drive when you reset your system the above error message will appear unless the diskette is a bootable system diskette. Remove the diskette from drive A: and reboot your computer. If the computer still does not boot up, you may have to restore system files to the hard drive.

- To restore system files:
  Make sure your hard drive information is correct in CMOS (see above for help in correctly setting up your CMOS).
  Insert the DOS or Windows 95 Boot Diskette provided with your Micron system and either reset or power on your system with the disk in the floppy drive.

- If you boot to a setup utility, exit out so that your computer is at the A: prompt. From the A:\ prompt type SYS C:\ and press the <Enter> key. Remove the Boot Diskette and Reboot your system by pressing the Reset button on the front of your PC.

System Problems

Problem

A large number of damaged sectors are encountered when attempting to format diskettes.

Possible Cause

- Typically, Micron computers are provided with a 1.44MB 3.5" floppy drive. An attempt may have been made to format a low-density disk in one of the Micron high-density floppy drives.

Solution

- Please refer to the DOS manual for more information about how to format low-density diskettes in high-density floppy drives.

Problem

The IDE CD-ROM is not being recognized by the system.

Possible Cause

- CMOS is configured incorrectly.
- The connection to the CD-ROM is improper or loose.

Solution

- Check in the system's CMOS Setup to ensure that the PERIPHERAL CONFIGURATION mode is set to Auto. For help in getting to your CMOS settings, see Chapter 3 - The BIOS Setup Program.

- With the power OFF, carefully open the system unit. Reconnect the CD-ROM ribbon cable on the motherboard and at the back of the CD-ROM. To assist you, the colored stripe going down the side of the gray controller cable signifies pin one and should be connected to pin one of the controller and drives. Also, check to ensure that the power connector in the CD-ROM is secure.

Problem

The system displays the error message COM Port 2F8 conflict during boot, or the system beeps, and displays the message "Press F1 to Continue, F2 for Setup."

Possible Cause

- System CMOS has been reset to defaults, and you have a modem installed on COM 2.

Solution

- Check that the modem settings are set correctly and not conflicting with any other devices.

  On Windows 95™ systems Serial/Com Port B should be set to COM 4. For DOS and Windows for Workgroups™, Serial/Com Port B should be set to Disabled or None. For help on CMOS settings, refer to Chapter 3- The BIOS Setup Program.

- If you are using Windows 95™ and the CMOS is set correctly, remove the checkmark from Use Original Configuration (Current) under the properties section for your Communications Port (Com 4) in device manager. Then, remove your modem from device manager and have the Windows 95™ operating system re-detect your modem.

Problem

The monitor is flickering noticeably or the video is distorted.

Possible Causes

- Interference
- Invalid or corrupt video drivers.

Solution

- Check for high power-draining devices, or high noise devices in the area. Examples are heaters, air-conditioners, other monitors, other computers, fluorescent lights, printers, microwaves, or televisions. Any of these devices could cause a flickering in your display because of the interference they can put into the power lines or the environment. Also, temporarily unplug any other devices that are in the same outlet or surge protector that the monitor and computer are using. This could be amplified speakers, or one of the devices listed above.

- Temporarily switch your video display to use default standard VGA drivers. Your display will not have the clarity or color definition that it usually does, however, check to see if everything appears normal. If it does, try reinstalling the video drivers specific to your video card that shipped with your system, or check the Micron Electronics Internet Site for updated video drivers.

Problem

After installing a new peripheral card, an unrelated part of the system suddenly stops working.

Possible Cause

- The new card may be attempting to use some of the same system resources, such as address space, I/O ports, interrupt lines, etc., and may be conflicting with the failing part of the system.
- When installing the new card, a different peripheral card or a cable may have been knocked loose.

Solution

- Remove the new card and retry system.
  If it works, you will need to change the I/O ports, interrupt lines or address regions the new card uses. Most cards have jumpers or switches that can be changed to reconfigure the settings. Refer to the documentation that came with the card to determine how to change the settings. If you have any questions, contact the card's manufacturer.

- Double check all the gray ribbon cables and power connectors to ensure that they are plugged in correctly and securely.

Hard Disk Problems

Problem

System has to be booted from a floppy disk. Hard drive is either unrecognized or unreadable.

Possible Cause

- The connections between the drive and the controller may be defective or loose.
- The hard drive's root directory or file allocation table may be corrupted. The controller or hard drive may also be defective.

Solution

- Check that the hard drive and controller are connected properly.
- If hard drive recovery software is available, use it to repair the damage. The only other solution is to attempt a high-level (DOS) format on the drive. ***Do not attempt to low-level format the drive!*** If the drive cannot be formatted, either the drive or the controller may be defective. Contact Micron technical support.

Problem

System has to be booted from a floppy disk. Hard disk is completely functional, but cannot be used for boot-up.

Possible Cause

- The hard drive's boot sector may have become corrupted.

Solution

- If hard drive recovery software is available, attempt to use it to repair the damaged boot sector. The only other solution is to attempt a high-level (DOS) format on the drive and transfer the DOS system to the boot sector. ***Do not attempt to low-level format the drive!*** Backup your data before formatting your drive.

Problem

Read/write, sector, data, or seek errors occur when attempting to access files on the hard drive.

Possible Cause

- The format may be fading.
- The hard drive may be developing media errors.
- The file allocation table may be corrupted.

Solution

- Using a file-by-file backup method, backup as much data as you can, then reformat the drive. If the format is successful, use a disk diagnostic software application to test the media of the drive (make sure the application locks out any errors it finds to make them inaccessible from DOS). Finally, restore your files from the backup tape or diskettes.

Introduction

If you are experiencing problems with your Micron system and Chapter 4, "Common Problems" does not provide the information needed to correct your problem, feel free to contact Micron Technical Support at 1-800-877-8856. Additional areas of support may be found by contacting the Micron Technical Support BBS at 1-800-270-1207, Technical Support Internet Mail: techsupport.meic@micron.com, Compuserve: GO MICRON or GO PCVEND-21, and Micron Electronics Home Page: http://www.mei.micron.com. But before you do, take a few minutes to read this section for information about the equipment and information you might need to help the technical support representative diagnose the problem.

Before You Call

Before contacting Micron Technical Support, please follow the next few steps. These steps are designed to prepare you for any of the questions the technical support representative might ask or any procedures he or she may need you to do. This will help solve your problem in the fastest possible time.

1. Make sure your system is plugged into a grounded power outlet.
2. Locate the failing system as near a telephone as possible, preferably close enough so that you can simultaneously talk with the technical support representative while you work on the system.
3. Have a medium to small sized Phillips-head screwdriver available. It's possible you may need to open your system to correct the problem.
4. Write down all error information you can remember, including error messages, software used (with version numbers), and so on.

We hope Micron Technical Support will be able to solve your problem over the telephone. However, in some extreme cases your system may need to be returned to Micron Electronics, Inc. for repair. The next section describes what to do if this is the case.

Returning Equipment to Micron Electronics

If it is determined that your system needs to be returned to Micron for repair or replacement, please observe the rules listed below. Failure to follow any of these rules may result in long delays in repair or the simple return of the system without repair.

1. Contact Micron Technical Support at 1-800-877-8856 to obtain an RMA (Return Material Authorization) number and to obtain shipping instructions before returning any portion of your system.

2. Make sure all printed-circuit boards or static-sensitive peripherals are completely enclosed in anti-static bags or foam.

3. Print the RMA number in large, legible numbers in black ink on the outside of the shipping boxes.

4. Enclose a note describing the problem as well as the name of the technical support representative who authorized the return.

Micron also highly recommends that you follow these additional steps for your protection:

1. Make a complete backup of your hard drive(s) before returning the system.

2. Use the original packing material that came with your system.

Please ship to the following address:

Micron Electronics, Inc.
Attn: RMA #xxxx ←——— **Please Note:**
1400 Shilo Drive **It is essential to obtain this RMA number from Technical Support or Customer Service BEFORE returning any Micron material.**
Nampa, ID 83687

POST and Boot Messages

POST (Power On Self Test) has two kinds of messages; those messages are the Error message and the Informational message. The following tables list these messages, their causes, and their solutions.

MESSAGE	POSSIBLE CAUSE	SOLUTION
Diskette Drive A Failure	Drive A failed or is missing.	Check Setup and cable connections.
Diskette Drive B Failure	Drive B failed or is missing.	Check Setup and cable connections.
Extended Ram Failed at Offset: nnnn	Extended memory not working or configured properly.	Replace defective memory.
Failing Bits: nnnn	Memory failure in System Extended or Shadow memory.	Replace defective memory.
Fixed Disk X Failure (where X=0 or 1)	The hard disk is not configured or not working properly.	Rerun SETUP and check connections or replace hard disk.
Fixed Disk Controller Failure	The controller has failed.	Check configuration and connections or replace system board.
Incorrect Drive A Type	Floppy drive A: not set correctly in Setup.	Run Setup.
Incorrect Drive B Type	Floppy drive B: not set correctly in Setup.	Run Setup.
Invalid NVRAM	NVRAM chip is bad.	Requires replacement of system board.
Keyboard Error, Keyboard Controller Error or Keyboard Error: nn	The keyboard or keyboard controller failed. A key is jammed or was held down during boot.	Check connections. You may have to replace the keyboard or system board. Make sure keys are not jammed or dirty.
Keyboard Locked	Keyswitch on the front of the case is locked.	Unlock the keyswitch.

Table B-1. Post and Boot Messages

MESSAGE	POSSIBLE CAUSE	SOLUTION
Monitor Type Does Not Match CMOS	Monitor type not correctly identified in Setup.	Run Setup and enter correct monitor type.
Operating System Not Found	Operating system cannot be located on Drive C: or Drive A:.	Check Setup to see if Drive A: and C: are properly configured, or put a bootable disk in Drive A:.
Parity Check 1 nnnn	Parity error found in the system bus.	Check Setup. May require replacement of system board.
Parity Check 2 nnnn	Parity error found in the I/O bus.	Check Setup. May require replacement of system board.
Previous Boot Incomplete Default Configuration Used	Previous POST did not complete successfully.	Run Setup, load default BIOS settings, make any necessary adjustments.
Real Time Clock Error	Real time clock failed BIOS test.	May require battery or system board replacement.
Shadow RAM Failed at offset	Shadow RAM failed.	May require replacement of system board.
System Battery is Dead	System battery voltage is too low.	Replace the system battery and run Setup to reconfigure the system.
System Cache Error Cache Disabled	External (L2) cache failed BIOS test.	System will still run, but slower. Replace cache at your convenience.
System CMOS checksum bad - Run Setup	System CMOS has been corrupted or modified incorrectly.	Run Setup and reconfigure the system.
System RAM failed at offset: nnnn	System RAM failed.	Replace defective RAM.
System Timer Error	Timer test failed.	Requires replacement of system board.

Table B-1b. Post and Boot Messages

Glossary

Application: A software program that operates under an operating system to perform a specific task.

BIOS: Basic Input/Output System. Programs that are permanently stored in the system board's ROM chips providing functions such as the power-on self test. Also see ROM.

Boot: To start the computer system and load the operating system.

Bus: The set of address or data lines used to transfer information between different components within a computer (such as memory, the microprocessor, and the expansion slots).

Cache: Provides fast, local storage for frequently accessed instructions and data to provide the processor with the fastest stream of information possible, while keeping main memory current.

Clock: A circuit that sends a consistent, periodic signal that is used to synchronize the computer and to step information through the system.

Closed: A circuit that is complete. Usually accomplished by placing a jumper over two pins on the system board or a peripheral card. Also see "Open" and "Jumper."

CMOS: Complementary Metal Oxide Semiconductor. A logic circuit family that uses very little power. Sometimes used to store information by applying constant, uninterrupted power through the use of an external battery.

Coprocessor: A microprocessor device that performs specialized computations (such as floating-point arithmetic) much more efficiently than the microprocessor alone.

CPU: Central Processing Unit. The integrated circuit chip that performs the actual computing functions of the computer. Other chips perform support functions like storing data and controlling peripherals. Also see microprocessor.

Disk: See "Floppy Disk" and "Hard Disk."

DMA: Direct Memory Access. A method for transferring data directly to and from system memory, bypassing the microprocessor.

DOS: See "Operating System."

DRAM: Dynamic Random Access Memory. Memory that requires a periodic refresh cycle to keep the stored information from being lost. Loss of power causes loss of data in this memory.

EISA: Extended Industry Standard Architecture.

Expansion Slot: A connector on the motherboard for holding a peripheral card.

Floppy Disk: A 3.5 inch or 5.25 inch removable storage medium used for storing programs and files externally from the computer system.

Format: A process that prepares a disk to hold data. For hard disks, there are two formatting process: low-level and high-level.

Hard Disk: An internal or external, high-capacity, high-storage medium.

Hertz (Hz): A unit of frequency equal to one cycle per second.

I/O Port: A connector that allows external and some internal peripherals to communicate with the computer system (e.g., serial ports and parallel ports).

I/O: Input/Output. A generic term that refers to the devices and processes involved in the computer's reading and writing data.

IDE: Integrated Drive Electronics. Currently the most popular type of hard drive used in PCs. A standard IDE adapter can handle a maximum of two hard drives.

Integrated Circuit: An electronic device that combines thousands of transistors on a small chip of silicon or other semiconductor. Such devices are the building blocks of computers.

Interface: The connection between the computer and its human operator, or between the computer and peripheral device.

ISA: Industry Standard Architecture. The standard bus interface that was implemented in the IBM AT.

Jumper: On a printed circuit board, a patch cable or wire used to establish a circuit.

LBA: Logical Block Addressing. Allows the system to address more than 528MB on the hard drive.

Megahertz (MHz): A frequency of 1 million cycles per second.

Memory: Devices used to hold information and programs while they are being accessed by the microprocessor. See also RAM and ROM.

Microprocessor: An integrated circuit that contains the circuits the computer needs to calculate and to communicate with the other parts of the system. See also CPU.

Modem: A device designed to allow computers to communicate over standard phone lines.

Motherboard: See "System Board."

Non-Volatile Memory: Memory that is maintained even when power is not on.

On-Board Floppy: A floppy disk drive controller that is incorporated into the system board.

Open: A circuit that is not complete. Usually accomplished by removing a jumper from two pins on the system board or a peripheral card. Also see "Closed" and "Jumper."

Operating System: The software the provides a link between application programs and the computer hardware (e.g., disks, memory).

PCI: Peripheral Component Interface. A form of local bus architecture that provides high-speed interconnection without directly interfacing with the processor.

Page Mode: Special function in DRAM that saves up to about 30% in cycle time by not re-loading RAS bits.

Page: Sections of memory consisting of sets of consecutive bytes. Pages begin on 4-KB boundaries.

Peripheral Card: A printed circuit board that gives the computer added capability, such as more memory or control of a new device. A card plugs into one of the expansion slots located on the system board.

Peripheral: Any device that is connected to the computer system (e.g., printers, keyboard, plotters, etc.).

Pin: Any of the leads on a device, such as an integrated circuit, that plug into a socket and connect to a system.

POST (Power On Self Test): Check-out procedures that the BIOS runs automatically when the system is turned on. These procedures verify that all computer hardware is functioning properly. If the test detects problems, the computer displays error codes before (or instead of) starting the operating system. The error codes can help a service person determine what is wrong with the computer.

Program: A set of instructions that a computer interprets to perform some task. Also see "Application" and "Operating System."

RAM: Random-Access Memory. The type of computer memory that can be used to store information while a program is running. RAM consists of a number of small integrated circuits that are plugged into the system board or an external memory card.

ROM: Read-Only Memory. The type of computer memory that is used to permanently store the information vital to computer operation, including some parts of the operating system. ROM is permanent and the contents will not be lost when the computer is turned off.

Setup Program: Used to inform the computer about installed peripheral, memory, configuration information, date and time, etc.

Shadow RAM: A method of copying BIOS routines from slower ROM chips to much faster RAM, increasing system performance.

SIMM: Single In-line Memory Module. A small circuit board containing memory components that plugs into special sockets located on the system board for upgrading the system memory. These modules generally need to be inserted in groups of two or four.

Software: A general term that describes a program or set of programs.

SRAM: Static Random Access Memory. Does not require periodic refreshing that dynamic memory requires.

System Board: The large printed-circuit board in a computer on which most electronic devices are mounted; the primary board in a computer. All other interfaces receive control signals or information from the motherboard. Also commonly referred to as the "mainboard" or "motherboard."

System Unit: The description for the computer case and all internal components (e.g., the system board, expansion cards, disk drives, power supply, etc.).

System: The assembly of basic components (e.g., power supply, motherboard, memory, video monitor, etc.) united by some form of communication to form an organized whole.

VESA: Video Electronics Standard Association. A group of standards developed for the purpose of defining video resolutions greater than VGA.

VGA: Video Graphics Array. The most widely accepted graphics hardware standard and the lowest common denominator for all graphics cards and monitors manufactured to date.

Wait State: A delay in the computer's information processing cycle caused by a difference in speed between a faster processor and slower memory. A 0 wait state means the processor does not have to "wait" for memory, and can access data as fast as needed.

Write Precompensation: In a hard disk, the varying of the timing of the read/write head current on the inner tracks of the disk to maintain a constant signal.

Installing Sound Device Drivers

This explains how to install the sound drivers necessary to utilize the onboard sound support. Prior to installing any drivers, follow the instructions on how to install a CD-ROM drive and how to connect external sound devices.

About Device Drivers

Device drivers are necessary for the computer system to communicate with devices such as CD-ROM drives, sound controllers, graphics adapters or devices that are not natively supported by the system BIOS. Once started, device drivers remain active in the background of the computer system. Usually a device driver is added to the CONFIG.SYS file, the AUTOEXEC.BAT file or both.

WARNING

This installation proceedure should only be used if your hard drive has been re-formatted. These drivers have been installed at the factory and do not need to be reinstalled on a new system.

Installing the Sound Drivers

Once you have connected your external sound devices, you can install the sound drivers. If you are installing a CD-ROM drive, it is recommended you install it before setting up the sound devices.

1. If you previously installed another sound card, remove it and all associated files from your AUTOEXEC.BAT and CONFIG.SYS files.
2. Start your computer system.
3. Insert the sound driver disk into your floppy drive.
4. From the DOS prompt (C:\), type: A:\INSTALL
5. Follow the on-screen instructions and the installation program will automatically copy the drivers to your hard drive.
6. Once the software is copied, the install program automatically updates your CONFIG.SYS and AUTOEXEC.BAT files.

MICRON ELECTRONICS, INC.
MICRON POWER LIMITED WARRANTIES AND SUPPORT

FIVE-YEAR LIMITED WARRANTY

Micron Electronics, Inc. (Micron) warrants that the microprocessor and main memory included in the new product sold by Micron will be free from defects in materials and workmanship for five (5) years from date of shipment by Micron.

THREE-YEAR LIMITED WARRANTY

Micron warrants that the hardware other than the microprocessor and main memory (but not the software) included in the new product sold by Micron will be free from defects in materials and workmanship for three (3) years from the date of shipment by Micron.

NINETY-DAY REPLACEMENT PARTS LIMITED WARRANTY

Replacement parts shipped by Micron are warranted against defects in materials and workmanship for ninety (90) days from the date of shipment by Micron or until the expiration date of the original Five-Year Limited Warranty or Three-Year Limited Warranty, as the case may be, whichever is longer.

TERMS OF LIMITED WARRANTIES

The Five-Year Limited Warranty, Three-Year Limited Warranty and the Ninety-Day Replacement Parts Limited Warranty are granted to the initial customer end-user only and are nontransferable. Any claims under these warranties must be made before the end of the applicable warranty period. During such period Micron, at its option, will: repair or replace any part covered by the Five-Year Limited Warranty, Three-Year Limited Warranty or the Ninety-Day Replacement Parts Limited Warranty which is determined by Micron to be defective in materials or workmanship; or provide a credit or refund.

Micron reserves the right to substitute functionally equivalent new or serviceable used parts. Micron's responsibility is limited to repair, replacement, credit or refund, any of which may be selected by Micron at its sole discretion.

The Five-Year Limited Warranty, Three-Year Limited Warranty and Ninety-Day Replacement Parts Limited Warranty cover only defects arising under normal use and do not include malfunctions or failures resulting from: misuse, abuse, neglect, alteration, problems with electrical power, usage not in accordance with product instructions; acts of nature or improper installation; or repairs made by anyone other than Micron, Micron-qualified third-party service providers, or you with the assistance of Micron technical support.

ON-SITE SERVICE

If you have purchased on-site service from a Micron-authorized third-party provider, such service will be provided for a period of one (1) year from the date of invoice or for such other period(s) as provided in your on-site service contract with the third party. Your contract with the third party provides that on-site service will be provided only for factory-installed products or products installed by the third-party provider. It also states that on-site service will not be provided for external peripheral hardware such as the keyboard, monitor or mouse. On-site service is not available in some areas.

You may call 800-438-3343 or 208-893-3434 to make arrangements with such third party to provide service to you.

RETURN PROCEDURES

You are responsible for returning products to Micron at your expense. Prior to returning product(s) to Micron for warranty service, you must obtain a Return Merchandise Authorization (RMA) number from Micron by calling 800-438-3343 or 208-893-3434. To obtain an RMA number, you must provide Micron with your valid charge card number (VISA, MasterCard or other issuer acceptable to Micron) or a Micron-authorized open Purchase Order to cover the replacement cost of the part at the time you obtain the RMA number. Micron will process this charge only if you fail to return the defective part at your expense within ten (10) business days from the date you obtain the RMA number. Replacement parts will be shipped to you at Micron's expense, subject to availability, via second day delivery service after you obtain an RMA number. Overnight delivery service may be available at an additional charge to you. Micron shall not be responsible for failure of the delivery service to make on-time delivery. If you cannot provide your valid charge card number or Micron-authorized open Purchase Order, Micron will ship, if practical, replacement products C.O.D. (by cashier's check) and reimburse you upon Micron's receipt of the defective part.

You must ship the product(s) to Micron in the original packaging, prepaid and insured by you, with the RMA number clearly identified on the packaging. Please retain your shipping information, including tracking numbers, until your amount has been credited by Micron. This will serve as your proof of return. Any product(s) replaced by Micron shall become the property of Micron. If Micron determines that failure of the product(s) was not a result of a defect in materials or workmanship, Micron reserves the right to charge you for parts and labor at Micron's then current labor rate. Micron will advise you prior to assessing these charges.

TECHNICAL SUPPORT POLICY

Micron provides free telephone technical support service with respect to installation and configuration of all hardware products sold by Micron. Micron also provides free telephone technical support service with respect to the configuration of factory installed software for thirty (30) days from the date of shipment. The Micron telephone technical support service number is 800-438-3343 or 208-893-3434.

Appendix E: Micron Power^{SM} Warranty

THIRTY-DAY MONEY-BACK POLICY

This product sold by Micron comes with Micron's thirty-day money-back policy. Opened software is not covered under this policy and may be subject to a restocking fee. If for any reason you are unsatisfied with the Micron product(s) you have purchased, or if you do not accept the Terms of Limited Warranties and other Terms set forth herein, you may return the product(s) to Micron for a full refund of the purchase price paid (less any restocking charge for opened software). This policy does not include payment by Micron for original or return shipping and handling charges. Prior to returning product(s) under this policy you must obtain an RMA number from Micron by calling 800-438-3343 or 208-893-3434. The product(s) must be shipped to Micron within thirty (30) days from the date of shipment by Micron to obtain such refund. Such product(s) must be shipped in the original packaging, prepaid and insured by you, with the RMA number clearly identified on the packaging. Please retain your shipping information, including tracking numbers, until your amount has been credited by Micron. This will serve as your proof of return. Upon receipt by Micron and verification that the product(s) have not been damaged or altered, Micron will provide you with a full refund (less any restocking charge for opened software).

LIMITATIONS

PRODUCTS SOLD BY MICRON ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF MICRON.

MICRON MAKES NO WARRANTY WHATSOEVER WITH RESPECT TO SOFTWARE INCLUDED IN ANY PRODUCTS SOLD BY MICRON, AND ALL SOFTWARE IS SOLD "AS IS" AND "WITH ALL FAULTS."

EXCEPT AS SET FORTH HEREIN, MICRON MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, AND MICRON DISCLAIMS AND NEGATES ALL OTHER WARRANTIES, INCLUDING WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND CONFORMITY TO MODELS OR SAMPLES. SOME STATES DO NOT ALLOW LIMITATIONS ON IMPLIED WARRANTIES, SO THESE LIMITATIONS MAY NOT APPLY TO YOU.

THE WARRANTIES SET FORTH HEREIN GIVE YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

IN NO EVENT SHALL MICRON BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU.

NO VARIATION OR EXCEPTIONS IN THE TERMS STATED HEREIN CAN BE MADE WITHOUT WRITTEN AUTHORIZATION BY THE PRESIDENT OF MICRON.

THESE LIMITED WARRANTIES APPLY ONLY IN THE CONTINENTAL UNITED STATES OF AMERICA, ALASKA, HAWAII, PUERTO RICO, AND CANADA.

A "FULL REFUND" AS USED ABOVE SHALL INCLUDE THE PURCHASE PRICE PAID BY THE CUSTOMER, BUT SHALL NOT INCLUDE SHIPPING COSTS AND INSURANCE PAID BY THE CUSTOMER.

GOVERNING LAW AND JURISDICTION

THESE LIMITED WARRANTIES ARE INCORPORATED INTO AND ARE ESSENTIAL AND MATERIAL PROVISIONS OF THE TERMS AND CONDITIONS OF SALE OF NEW MICRON PRODUCTS TO YOU (SALE TERMS). ALL DISPUTES ARISING OUT OF OR RELATED TO THE LIMITED WARRANTIES SET FORTH HEREIN (CUSTOMER DISPUTES) SHALL BE GOVERNED BY THE LAWS OF THE STATE OF IDAHO. THE CUSTOMER HEREBY CONSENTS TO THE JURISDICTION AND VENUE OF THE STATE COURTS OF IDAHO TO RESOLVE ANY AND ALL CUSTOMER DISPUTES WITH MICRON, AND THE CUSTOMER WAIVES ALL DEFENSES TO SUCH JURISDICTION AND VENUE INCLUDING, BUT NOT LIMITED TO, ANY DEFENSE BASED ON INCONVENIENT FORUM.

MICRON ELECTRONICS, INC.
MICRON POWER LIMITED WARRANTIES AND SUPPORT FOR INTERNATIONAL PRODUCT SALES

FIVE-YEAR LIMITED WARRANTY

Micron Electronics, Inc. (Micron) warrants that the microprocessor and main memory included in the new product sold by Micron will be free from defects in materials and workmanship for five (5) years from date of shipment by Micron.

THREE-YEAR LIMITED WARRANTY

Micron also warrants that the hardware other than the microprocessor and main memory (but not the software) included in the new product sold by Micron will be free from defects in materials and workmanship for three (3) years from the date of shipment by Micron.

NINETY-DAY REPLACEMENT PARTS LIMITED WARRANTY

Replacement parts shipped by Micron are warranted against defects in materials and workmanship for ninety (90) days from the date of shipment by Micron or until the expiration date of the original Five-Year Limited Warranty or Three-Year Limited Warranty as the case may be, whichever is longer.

TERMS OF LIMITED WARRANTIES

The Five-Year Limited Warranty, Three-Year Limited Warranty and the Ninety-Day Replacement Parts Warranty are granted to the initial customer end-user only and are nontransferable. Any claims under these Warranties must be made before the end of the applicable warranty period. During such period Micron, at its option, will: repair or replace any part covered by the Three-Year Limited Warranty, Five-Year Limited Warranty or the Ninety-Day Replacement Parts Limited Warranty which is determined by Micron to be defective in materials or workmanship; or provide a credit or refund. Micron reserves the right to substitute functionally equivalent new or serviceable used parts. Micron's responsibility is limited to repair, replacement, credit or refund, any of which may be selected by Micron at its sole discretion.

The Five-Year Limited Warranty, Three-Year Limited Warranty and Ninety-Day Replacement Parts Limited Warranty cover only defects arising under normal use and do not include malfunctions or failures resulting from: misuse, abuse, neglect, alteration, problems with electrical power, usage not in accordance with product instructions; acts of nature or improper installation; or repairs made by anyone other than Micron, Micron-qualified third-party service providers, or you with the assistance of Micron technical support.

RETURN PROCEDURES

You are responsible for returning products to Micron at your expense. Prior to returning product(s) to Micron for warranty service, you must obtain a Return Merchandise Authorization (RMA) number from Micron by calling in the United States of America 208-893-3434. In order to obtain an RMA number, you must provide Micron with your valid charge card number (VISA, MasterCard or other issuer acceptable to Micron) or a Micron authorized open Purchase Order to cover the replacement cost of the part at the time you obtain the RMA number. Micron will process this charge only if you fail to return the defective part at your expense within ten (10) business days from the date you obtain the RMA number. Replacement parts will be shipped to you at Micron's expense, subject to availability via international delivery service within five (5) business days from the date you obtained the RMA number. Micron shall not be responsible for failure of the delivery service to make on-time delivery. All costs of insurance, import and export duties, and all other fees and charges imposed by government or quasi-governmental agencies or officials must be paid by you. If you cannot provide your valid charge card number or Micron-authorized open Purchase Order, Micron will not ship replacement products.

You must ship the product(s) to Micron in the original packaging, via DHL, Federal Express, UPS or another international courier acceptable to Micron (Qualified Courier), prepaid and insured by you, with the RMA number clearly identified on the packaging. Please retain your shipping information, including tracking numbers, until your amount has been credited by Micron. This will serve as your proof of return. Any product(s) replaced by Micron shall become the property of Micron. If Micron determines that failure of the product(s) was not a result of a defect in materials or workmanship, Micron reserves the right to charge you for parts and labor at Micron's then current labor rate. Micron will advise you prior to assessing these charges.

TECHNICAL SUPPORT POLICY

Micron provides free telephone technical support service with respect to installation and configuration of all hardware products sold by Micron. Micron also provides free telephone technical support service with respect to the configuration of factory installed software for thirty (30) days from the date of shipment. The Micron telephone technical support service number in the United States is 208-893-3434.

THIRTY-DAY MONEY-BACK POLICY

Except as provided below, this new product sold by Micron comes with Micron's thirty-day money-back policy. Opened software is not covered under this policy and may be subject to a restocking fee. If for any reason you are unsatisfied with the Micron product(s) you have purchased, or if you do not accept the Terms of Limited Warranties and other Terms set forth herein, you may return the product(s) to Micron for a full refund of the purchase price paid (less any restocking charge for opened software). This policy does not include payment by Micron for all costs of shipping, insurance, import and export duties and all other fees and charges imposed by government or quasi-governmental agencies or officials all of which must be paid by you. Prior to returning product(s) under this policy you must obtain an RMA number from Micron by calling 208-893-3434. The product(s) must be shipped back to Micron within thirty (30) days from the date of shipment by Micron to obtain such refund.

Such product(s) must be shipped to Micron via a Qualified Courier in the original packaging, prepaid and insured by you, with the RMA number clearly identified on the packaging. Please retain your shipping information, including tracking numbers, until your amount has been credited by Micron. This will serve as your proof of return. Upon receipt by Micron and verification that the product(s) have not been damaged or altered, Micron will provide you with a full refund (less any restocking charge for opened software).

LIMITATIONS

PRODUCTS SOLD BY MICRON ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF MICRON.

MICRON MAKES NO WARRANTY WHATSOEVER WITH RESPECT TO SOFTWARE INCLUDED IN ANY PRODUCTS SOLD BY MICRON, AND ALL SOFTWARE IS SOLD "AS IS" AND "WITH ALL FAULTS."

EXCEPT AS SET FORTH HEREIN, MICRON MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, AND MICRON DISCLAIMS AND NEGATES ALL OTHER WARRANTIES, INCLUDING WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND CONFORMITY TO MODELS OR SAMPLES. SOME JURISDICTIONS DO NOT ALLOW LIMITATIONS ON IMPLIED WARRANTIES, SO THESE LIMITATIONS MAY NOT APPLY TO YOU.

THE WARRANTIES SET FORTH HEREIN GIVE YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY HAVE OTHER RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION.

IN NO EVENT SHALL MICRON BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU.

NO VARIATION OR EXCEPTIONS IN THE TERMS STATED HEREIN CAN BE MADE WITHOUT WRITTEN AUTHORIZATION BY THE PRESIDENT OF MICRON.

A "FULL REFUND" AS USED ABOVE SHALL INCLUDE ONLY THE PURCHASE PRICE PAID BY THE CUSTOMER. ALL COSTS OF SHIPPING, INSURANCE, IMPORT AND EXPORT DUTIES, AND ALL OTHER FEES AND CHARGES IMPOSED BY GOVERNMENT OR QUASI-GOVERNMENTAL AGENCIES MUST BE PAID BY YOU.

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